



Dry facts

...from Arctic India Sales

July - August - September - 1981

Vol. 1 No. 2

Dry Facts About "Dry Facts"

It was indeed heartening to know that most of our readers found our first issue of "Dry Facts" quite interesting and not so "dry". We are particularly encouraged as almost all of our readers have sent in cards requesting to receive "Dry Facts" regularly. We would like to thank all our readers who have separately sent in their felicitations, comments and valuable suggestions and hope that they will in future keep guiding us to make every issue of "Dry Facts" more informative and interesting.

I.I.T.F.—'81

Featured alongside below in the photograph is the Arctic India Sales booth at the India International Trade Fair—'79 in the Hall of Industries. This year again from November 14 to December 4 we will be participating in the India International Trade Fair—'81 to be held at Pragati Maidan, New Delhi.

Apart from the range of our portable dehumidifiers on display we will be exhibiting a working model of an air-to-air heat recovery system based on the concept of heat pipes. A specially designed vegetable seed dryer for the Indian market will also be on display. As you are aware, the application of our desiccant type dehumidifiers using the rotary bed concept, is very wide and as universal as air itself. Our continued contact with you has been as a result of your application requirement for dehumidified air projected to us by you in the past few years, as also for our heat recovery devices and other products that we are handling for various overseas principles. As such we invite you all to personally visit us at our booth at IITF—'81.

Bry-Air (India) Pvt. Ltd.

World-wide, BRY-AIR is synonymous with dehumidification; it is also a dominating company in the field of heat recovery systems. BRY-AIR, Inc. USA now takes roots in India in the form of a new company BRY-AIR (INDIA) Pvt. Ltd. As you are aware, ARCTIC INDIA SALES has for sometime been offering equipment with the technical assistance of BRY-AIR, Inc. U.S.A. With the incorporation of BRY-AIR (INDIA) we expect to offer from the new & very modern manufacturing facility the very latest rotary and drum type desiccant type dehumidifiers, plastic dryers, seed dryers, specialized heat recovery equipments, solar assisted dehumidification and refrigeration systems, combination dehumidification & refrigeration systems, climatic chambers etc. With this new manufacturing facility, with India as the base, BRY-AIR equipment will now be widely available in the West Asian, South East Asian and the Russian Market.

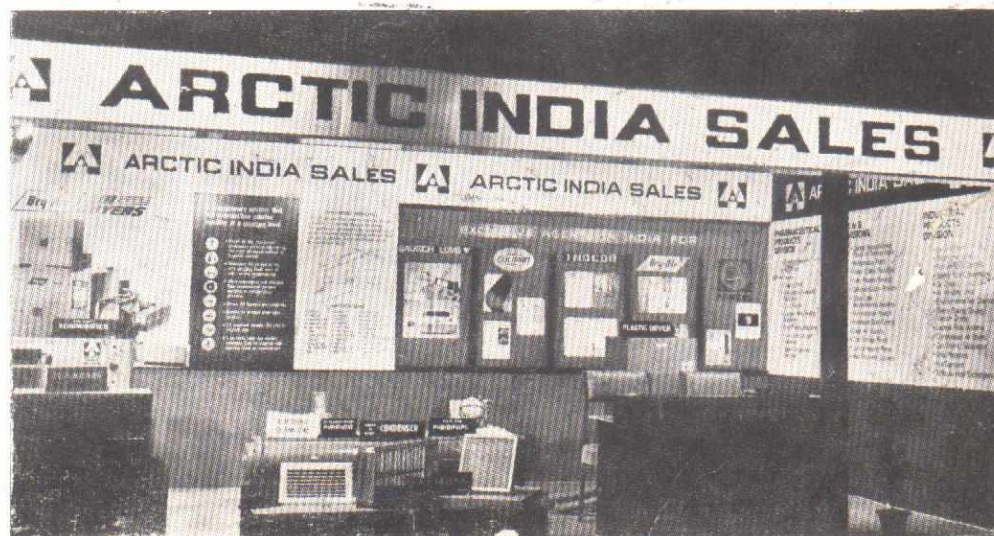
Training Abroad

To update our capability in applications engineering, manufacturing and R&D, an exchange has commenced whereby our personnel will now be regularly visiting BRY-AIR at U.S.A. and vice-versa. At present Mr. Rajnish



RAJNISH JOSHI
Sales Co-ordinator

Joshi, the company's Sales co-ordinator and a specialist in dehumidification application engineering is working with the staff of Bry-Air Inc., at Sunbury, Ohio for 8 weeks to gain more experience in all aspects of sales, applications, and production. Next month we will be having amongst us Mr. Paul D. Griesse, President of Bry Air Inc. and Lynn Beach, Vice President—Manufacturing.



Something more about us

Youth has been one of the most important factors in the very rapid growth of our organisation. You would be surprised that our group of almost 40 members averages 28 years in age, and yet some of these boys are the most experienced in dehumidification system concept and engineering as also manufacture of specialized integrated combination systems. To assist you more effectively in understanding your problems and suggesting an appropriate approach to it we have recently added to our team of engineers: Mr. Yashpal Joshi and Mr. Katoch at Delhi, Mr. Badge at Bombay & Mr. Padma Prasad at Bangalore.

SEED DRYERS

The Arctic India dehumidifiers which find an unlimited application in virtually every industry from pharmaceutical to fertilizers etc., now for the first time use the principle of the dessicant adsorption of moisture to offer a full range of **Seed Dryers** (based on the current technology being used by M/s. BRY-AIR Inc., U.S.A., the world leaders in this field.

Listed below are some of the typical specifications for a complete range of seed dryers :

Type of dryer	: Non-cyclic continuous regenerative type.
Type of seeds to be dried	: Cabbage, Cauliflower, Carrot, Knol Knol, Spinach, Tomato, Onion, Water-Melon etc.
Bulk density	: 450 to 500 Kgs./cu.m. i.e. 27 to 30 lbs/cu.ft.
Period of drying	: 6 to 8 hrs.
Reduction in moisture content	: average 13% to 5% or 12% to 4% constituting 8% moisture removal
Drying air temperature	: $100 \pm 15^{\circ}\text{F}$ at approx. 5% rh. This has been particularly selected to optimise drying capacity, minimise power and retain germination potential.

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.

Electrode Storage

All mineral coated electrodes and many special purpose electrodes are hygroscopic. Unpacked and open they start absorbing a lot more moisture than permitted. If after manufacture, these electrodes are not put in storage areas where humidity is properly controlled, it results in addition of moisture to the electrode. Packing in uncontrolled humidity environment leads to the same result. Similarly even properly dried electrodes, when unpacked immediately start absorbing moisture. *The enemy is moisture.* Welding with moist electrodes leads to the following familiar problems :

1. Increased arc voltage
2. Spatter loss
3. Porosity in weld deposit
4. Underbead cracking (which is not directly visible and which may result in premature breaking of the joint)
5. Poor slag removal
6. Undercutting and general rough welds.

These hazards as finally experienced in the actual usage of the electrodes can be eliminated by ensuring that humidity is properly controlled at the time of

- a) Manufacture
- b) Storage prior to packing
- c) During packing
- d) bulk user storage

Thus, it is seen that amongst some of the above mentioned application points it is the centralized storing, either at the manufacturing stage or at bulk usage state that humidity control of the environment becomes important.

A few years ago Philips projected to us this problem of controlling the humidity in one of their storage areas for special electrodes. After a careful evaluation of their problem and also the insight given into the effects of moisture at various relative humidities by the engineers of Phillips at Thana, we come to the conclusion that the temperature of storage is not a very critical criteria, whereas the relative humidity played a very important role. It was determined that the temperature could be maintained at anywhere between 5 to 10°C above ambient and with this condition basic dehumidification equipment sizing selection were done with 35%, 40% and 45% rh. The most economical selection was afforded by an average 40% rh design. Subsequently based on the above a 600 cfm unit of the rotary desiccant bed type was installed by us at their Thana electrode storage facility. The size of the storage chamber was approx 4500 cft. The humidity conditions were satisfactorily achieved. What was more important was to determine whether the original selection of 40% as the basis of design was inadequate or appropriate; it was found that rh below 40% would have been an unnecessary over-specification

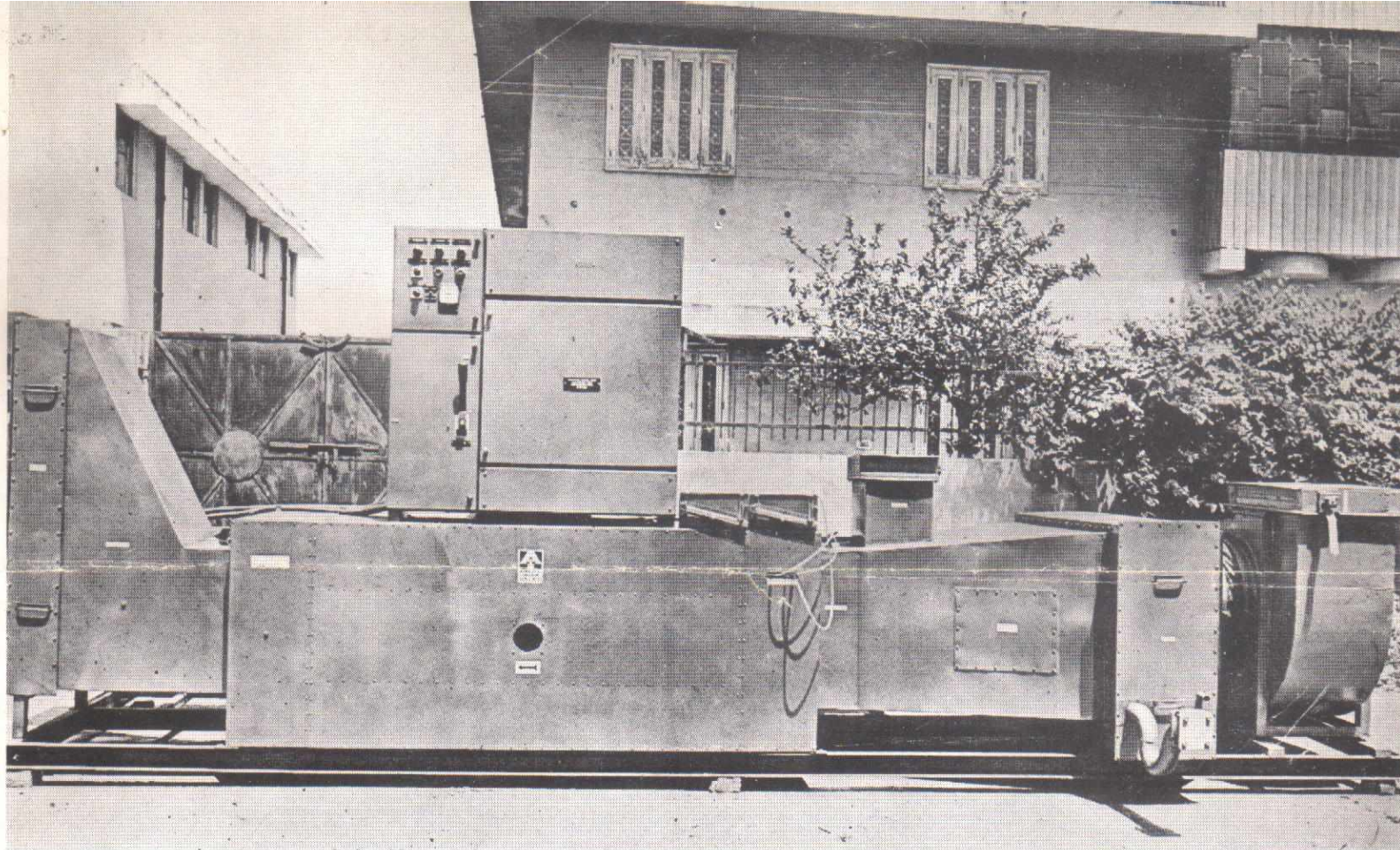
whereas rh control above 40% would eventually lead to the same problems as have been described above. Subsequently for most electrode storage applications, provided a good vapour barrier treatment also exists, the rule of thumb developed by us would suggest the following formula :

$$\text{Dehumidified air quantity} = \frac{\text{Volume of electrode store} \div 60}$$

If the temperature inside the storage area is maintained quite high then the air returning to the humidifier inhibits optimum performance of the dehumidification equipment as adsorption at higher temperatures is relatively less. One way of over-coming this is to use plain water fed pre-cooler integrated into the dessicant type dehumidifier. On the other hand where along with the control of humidity it is desired that the temperature is not elevated considerably in the storage area, then use is made of plain water fed after-cooler, which, if required, is also integrated into the machine.

Subsequent to the Philips experience, many leading manufacturers of electrodes have been in touch with us for recommending to them dehumidification plants. We are happy to be already associated with the following establishments who have gone in for dehumidification equipment for electrodes storage from us :

1. Cochin Shipyard Limited
2. Integral Coach Factory
3. General Electrodes & Equipments Co.



Some Recent Applications

Shown above is one of the 2 desiccant type dehumidification systems specially engineered around our standard 3000 cfm unit for Grindwell Norton Ltd. Each system is capable of handling a total air quantity of 4500 cfm of which 1500 cfm is by-pass air. These units will be used to control the environment to approx. 30% rh at 74°F in an area where grinding wheels are manufactured by Grindwell Norton.

We have just recently shipped out to Twin City Organics in Bombay our desiccant type dehumidification plant of 1500 cfm capacity for camphor drying. It is reported from the user that with the installation of this machine he has been able to substantially increase the production of camphor.

We are specially designing and engineering for Kirloskar Pneumatic Co. a dehumidification system with 2 dehumidifiers in cascade with pre and inter-coolers whereby without recirculation, dry air in one pass is available at almost (—) 30°F dew point.

British Airways have recently ordered from us a 300cfm unit for their Jet Engine storage.

Some Recent Visitors at our Factory

Norton U.S.A.
Grindwell Norton
Gelsules Medicaps
Cochin Shipyard
Abbott Labs.

Ranbaxy Lab.
Dabur (Dr. S K. Burman)
Defence

Upton
Grindwell Norton

Capsulation Services
Bharat Electronics Ltd.

— Mr. Jack J. Helander, P.E.
— Mr. K.S. Subramanian
— Mr. R.R. Shah
— Mr. S. Gopalan
— Dr. Patel
— Dr. Paranjape
— Mr. H.K. Paranjape
— Mr. Kohli
— Mr. Bhandari
— Col. Chona
— Mr. Anantharaman
— Mr. Lakshmanan
— Mr. J.N. Vyas
— Mr. R. Udayakumar
— Mr. L.D. Chandrashekar
— Mr. M.M. Shah
— Mr. B.M. Bhardwaj

UNDERSTANDING DEHUMIDIFICATION BETTER

Adsorb

The fundamental process of all Arctic-India dehumidifiers. The attraction of water vapour to a solid and retained there without physical or chemical changing of the solid. The principle of adsorption is responsible for Arctic India's continuous drying capabilities such that the solid to which humidity is drawn may be used indefinitely.

CFM

Cubic feet/minute—Arctic India manufactures complete environmental

control systems in a variety of CFM ranges.

Desiccant

A substance used for drying. First introduced by Davidson Chemical in 1921. Considered today as the leading adsorbent in the field of dehydration.

The desiccant to be used is determined by the drying demand placed on the unit and the characteristics of the controlled space. The three desiccant types are : Silica Gel (SiO_2), Molecular Sieve, and Activated Alumina
....more in the next Issue of Dry Facts.



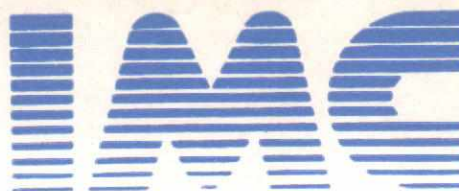
BRY-AIR

Bry-Air is the first name in dehumidifiers world-wide.

Bry-Air dehumidifiers remove moisture through a principle of continuous physical adsorption with a rotating desiccant filled bed.

BRY-AIR equipment range :

- * 23 standard dehumidifiers—50 cfm to 30000 cfm
- * Vegetable Seed Dryers
- * Plastic Dryers
- * Integrated skid mounted refrigeration cum dehumidification systems.
- * Heat Recovery packages
- * Environmental chambers.



IMC

IMC Instruments Inc. is an established and well known manufacturer of Portable Digital Thermometers and temperature monitoring panels, designed for rugged use in industries, Labs., plant and engineering applications etc.

IMC Digital Thermometers—exclusive features :

- * Read out to 0.1°F throughout the range
 - * Universal Probe option
 - * Built-in precision reference for self re-calibration.
 - * Special "Hold" Feature
 - * Cold Junction compensation
- Range : -130°C to + 1200°C



MCC Powers

MCC Powers is a unit of Mark Controls Corporation. MCC Powers range covers :

- * Thermostats
- * Hygrostats
- * Controllers & Transmitters
- * Valves & Actuators
- * Energy Management systems

* Pneumatic conveying equipment
Powers specialize in pneumatically operated control devices and simultaneously offers almost all controls in the electric and electronic range for HVAC applications.



BRASCH

Brasch Manufacturing Co. Inc. located at Maryland Heights Missouri, USA is the worlds leading and largest manufacturer of :

- * Electric Duct heaters
- * Hot Water Boilers (Electric)
- * Steam Boilers (Electric)
- * Baseboard Heaters
- * Remote Control Panels
- * Electric Oven Heaters
- * Unit Heaters
- * Special heaters for Nuclear Power plants.

Quality is guaranteed by the Brasch name. Engineering trained inspectors put each heater, panel and boiler through a rigorous 100% quality control inspection.

Brasch in house Computer's engineering design and material control programs provide fast accurate service.



HOWDEN

Heat Recovery Equipments

Howden Heat Pipes Products Division is a member of a very large Howden Group of Companies which operate world-wide in almost every sphere of engineering.

Howden Thermal offers low cost solution to conserving energy with heat exchangers using the heat pipe concept. Briefly the product range includes air-to-air heat/energy recovery units for HVAC and Industrial applications
Typical features :

- * Recovers over 85% of the escaping heat
 - * No moving parts
 - * No cross contamination between the two air streams
 - * Very compact
 - * Payback period : 6 to 12 months
- Typical applications :
- * Dryers and Oven of all types
 - * Furnace exhausts
 - * Air-conditioning exhausts in hospitals, etc.



BARBER COLMAN

Barber Colman is a wellknown name in environmental controls, air distribution products, energy recovery systems, energy management systems, machine tools, cutting tools and textile machinery, industrial instruments, motors, precision dynamics and aircraft products and through us offer :

Air distribution products :

This includes grills, registers and diffusers for all types of supply and return air requirements and also a wide range of air conditioning terminals.

Environmental controls :

This includes thermostats, valves, actuators for HVAC in the electric pneumatic and solid state range.

Energy Management systems :

These provide precise HVAC monitoring and supervision of improving man power usage, increased productivity, extend equipment life and provide increased security and safety as part of complete building automation systems.