



dry facts

...from Arctic India Sales

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AN EVENTFUL QUARTER

Seminar Time Again!!!

A regular aspect of Arctic India Sales' marketing activity over the last two years has been the presentation of seminars on humidity control, in pharma industry, energy recovery from waste heat, seed drying and storage and arresting corrosion. Aided by a slide show, these technical seminars are helpful for plant engineers, consultants and senior engineers to understand the basics of moisture damage and its control. Technical material prepared specially for the seminars is available from Delhi Office. For specific requests, write to the Publicity Department, Arctic India Sales, 20-Rajpur Road, Delhi-110 054.

Seminar on delair Compressed Air Drying Systems

Compressed air has many advantages—safety, simplicity, flexibility; hence, increasing industrial use is being made of compressed air in more complex industrial processes and applications. The more sophisticated the industrial equipment, the greater is the demand for higher degree of *compressed air quality*.

Air compressor and dryer manufacturers today offer a wide

variety of products capable of producing a very broad range of industrial air quality. However, for the compressed air user, designations such as 'technically oil-free air' and 'bone dry air' are confusing and do little to help him select the right equipment for the right quality of air.

Helping to Make the Right Selection

Delair presented a series of seminars in Delhi, Bombay, Baroda, Bangalore, Madras, Hyderabad, Calcutta and Jamshedpur in September 1988, to educate customers, consultants and compressor manufacturers about the importance of quality air and how to achieve this quality with the right selection of drying and filtration equipment.

The seminar was aided by a slide show which explained to the viewer the main pollutants which affect the quality of air, and their resultant effect, removal of compressed air contaminants, basics of moisture removal and filtration, methods of drying compressed air, the **Delair dryers**, criteria for selection of the right dryer and **Why Delair?**

Delair strongly believes that basic understanding of the how and why of moisture removal and filtration helps the customer to pinpoint his application need and enables him to make the right choice for the most cost effective solution to his problem.



SHIFTING FOCUS ON ENERGY CONSERVATION AND MANAGEMENT

Bry-Air Heat Recovery Systems make a Significant Contribution

Increasing dependence of our economy on energy for its growth on the one side and fast depleting commercial energy sources on the other has forced the industry and our government to focus more attention on Energy conservation and management.

Energy Conservation is Energy Production Without Cost and Without Pollution

A number of programmes have been initiated to promote the concept of energy conservation through "good house keeping" and adoption of energy efficient technologies and processes.

EMCON-88

Emcon-88 was a seminar organized by the Institute of Plant Engineers at Hyderabad from 6th to 11th September towards promoting energy conservation in Industry and Utilities.

Bry-Air participated in the poster and product exhibition organized on the occasion with its heat pipe based heat

recovery systems. The product and its application generated a lot of interest among the visitors.

Workshop on "Energy Efficient Technologies"

Petroleum Conservation Research Association organized a three day workshop on "Energy Audit and Energy Efficient Technologies" at hotel Maurya Sheraton from 26th to 28th September.

Bry-Air was invited to present a paper on "Energy Conservation by Air-to-Air Heat Recovery Systems". The paper was presented by Mr. Rajnish Joshi and is a part of the printed booklet brought out for the occasion.

Bry-Air is proud of its contribution towards the thrust on energy conservation programmes and can provide viable solutions to your energy saving problems. Write to us for more details.

SUCCESSFUL GROUNDNUT SEEDS PRESERVATION

A Premier Institution's experience with Bry-Air Dehumidifiers for Seed Drying and Storage



Orissa State Seed Corporation is India's leading institution in producing quality seeds, a basic input for increased food production. The corporation has seed processing plants at Bargarh and a groundnut seed processing plant at Bhubaneswar.

Storage of groundnut seeds is an acute problem during June to October, a period of high relative humidity. Storage experiments were conducted to determine the equilibrium storage parameters such as temperature and relative humidity with response to a particular moisture content of seed. For conducting the storage experiments, one chamber at Bhubaneswar cold storage was modified and fitted with a 200 cfm capacity dehumidifier supplied by Bry-Air. 500 quintals of groundnut seed were preserved in the controlled chamber. The experiments were found to be successful and initial germination capacity of groundnut seed was maintained even after storage period of five months i.e. from June to October. A refrigerated dehumidified seed store for storage of groundnut in a big way is under planning. It will provide quality groundnut seeds in the months of September and October, stored after Rabi harvest as there is great demand for early planting with adequate and solid moisture.

This experiment provided the necessary data for designing and installation of an Air-conditioned Seed store at the processing plant, Bargarh. The A.C. store is being utilised for storage of breeder and foundation seeds.

Dehumidification system can also be applied for drying and storage of vegetable seeds besides sensitive seeds like soyabean.

The Orissa State Government has ambitious plans and programmes to extend Soyabean as a major oilseed crop in the state, for which a suitable storage system is to be developed to protect it from prevailing high humidity during the period of monsoon.



Focus on Quality Seeds

Quality seeds being processed by Orissa State Seed Organization are part of the government's

policies for greater food production and impetus is being provided for making available the best grade seed to the farmers.

Bry-Air is proud of the important role it plays in preserving the all important national wealth—the grain.



“Dehumidification for Seed Storage and Seed Drying” was the theme of the seminar, jointly presented by **Orissa State Seed Corporation and Bry-Air India** on August 25th at Bhubaneswar.

Shri K.B. Verma, Secretary Agriculture and Co-operation, Government of Orissa graced the occasion and showed keen interest in the dehumidification equipment installed by Bry-Air.

Shri G.C. Das, Managing Director of Orissa State Seed Corporation in his keynote address highlighted the successful experiments carried out by the Corporation for storing groundnut seeds during a period of high relative humidity and retaining its germination potential with the Bry-Air equipment. The equipment is also being successfully used to store breeder and foundation seeds.

Mr. Rajnish Joshi, Ex-Vice President, Bry-Air, presented the seminar. The application of dehumidification system for seed drying and storage plays a vital role for maintaining and prolonging seed quality. One of the most important reason of spoilage of seed is “excess of moisture”, either contained in the seed before storage or absorbed in the process of storage. The desirable moisture content is tailored mechanically by adsorption process.

Bry-Air dehumidification systems have been successfully applied for seed drying and seed storage maintaining its viability and are being used in India and the World over.

WHEN MOISTURE IS TORTURE!!

delair Dehydrators — Aiding Better Telecommunication Links

No More Crosstalk!

In India, we are all quite familiar with the inherent problems with our telecommunication links, Crosstalking, Voice fading, energy losses, arcing and time differentials are all problems, we take for granted as being due to obsolete exchange system being used.

The problem, however, is not unique to India and the cause, may sound surprising to you, is the moisture entrapped in the transmission lines.

Moisture, the Hidden Enemy

In all transmission systems electro-magnetic waves have to be transported from the amplifier to the receiver.

The transmission path is divided into several parts.

Amplifier — waveguide — antenna

antenna — waveguide — receiver.

Electromagnetic waves can only be transported completely undistorted in an absolute vacuum and through absolute reflecting guides. In practice, however, this is impossible.

Obstacles in the form of dust particles and water molecules etc. as well as waveguide imperfection caused by corrosion distorts the electromagnetic waves by scattering, velocity loss, time differentials and so on.

As waveguides, horn antennas and cables are never 100% air tight, penetration of moist air at barometric pressure causes corrosion. Wind speed causes overpressure on the outside of the transmission line, thus introducing air penetration, even against low inside overpressure.

Therefore, the best way to prevent penetration of moisture and dust particles is to pressurize the transmission lines.

In order to maintain a low relative humidity inside the transmission components under all conditions, the air has to be clean and very dry.



The solution—Delair Pressurizers

Delair Netherlands, developed 50 years ago special pressurizing systems for the telecommunication industry.

Delair dehydrators or air pressurizing systems are based on the principal of drying the air by adsorption techniques. The air supplied is so very dry that even under the most severe weather conditions, no water vapour can condense.

The dry air is supplied at an adjustable pre set pressure to ensure a slight overpressure in the system which consequently avoids the penetration of ambient air through leaks. This helps improve the quality of transmission in radiolink and cable systems.

When very small quantities of air are sufficient for pressurizing closed transmission systems, an adsorber of sufficient capacity can operate for several years and a simple manual exchange of the adsorber is possible. When larger quantities of air are required, the pressurizing system has to be of the automatic regeneration type.

This is known as the dual tower system.

Application Areas

Dry-Air pressurizers are mainly applied in the following fields:-

- ★ Radio Telecommunication link transmission systems.
- ★ Broadcasting systems
- ★ Cable transmission systems
- ★ Radar systems

Specific system components which have to be pressurized are

- ★ Wave guide runs for telecommunication (flexible and rigid)
- ★ Horn antennas
- ★ Waveguides in mobile installation.
- ★ Waveguides for radar installation.
- ★ Radomes
- ★ Transmission cables
- ★ Low noise amplifiers.

A clear signal from Delair

Delair pressurizers or dehydrators are being used by the army, navy and airforce for their radar systems in several countries the world over.

Fifty long years of experience in atmospheric and compressed air drying and developing, designing and manufacture of the dry air pressurizer makes Delair the world leaders in this field.

**A message for the telecommunication industry.
Delair calling—loud and clear!**

THE REGENERATION PROCESS

Regeneration is simply the process of removing moisture from "wet" desiccant, thus preparing the desiccant for its next drying cycle. Desiccant can be heat regenerated; One method is to combine heat (supplied by either an internally or externally mounted heater) with Purge Air (dried compressed air expanded in volume to atmospheric pressure). This method of regeneration is the combined pressure and swing or commonly known as the reduced purge method. The Delair DA and PDPA series of dryers are based on this design. The Second Method is to dry the desiccant by heating the ambient air to the required degree and passing it through the desiccant to drive off

the moisture. This method is the Temperature Swing or commonly known as the 'no loss' method as no use is made of the dried compressed air as purge air. The Delair DB and DBM series are based on this design.

EVALUATING HEAT— REGENERATIVE DRYERS

When evaluating regeneration methods of Heat Regenerative dryers, two important design parameters have to be considered.

1. Regeneration temperature of the bed must be kept as low as possible.
2. To avoid Thermal shock of the desiccant the regeneration cycle must provide sufficient time for the heated desiccant bed to cool down before tower switch over.

1. *Regeneration Temperatures.*

In the no loss type of dryer, the ambient air is heated only to the degree of temperature required, thus conserving heat and eliminating use of purge air.

2. *Thermal Shock.* Inadequate desiccant cool down will cause hot desiccant to come in contact with the comparatively cool process air stream causing thermal shock, leading to desiccant bead fracture and pulverization.

ADVANTAGES OF A (NO LOSS) DRYER

- ★ No purge air losses are involved. Dryer 'in' means dryer 'out'.
- ★ Suitable for large capacity dry air needs.
- ★ Suitable for every budget.

DESIGN PARAMETERS OF THE DB DRYER

The Delair DB range of heat regenerative dryers are based on the significant parameters of controlled regeneration temperatures and adequate cool down period for the desiccant.

THE OPERATING PRINCIPLE

Drying—The moist compressed air coming in via one of the two inlet valves is dried by the adsorbent and leaves via one of the two outlet valves.

Changeover—Before the automatic change over takes place, the regenerated adsorber is pressurized. Once the adsorber is at the correct pressure the process valves reverse, the adsorber to be regenerated is depressurized.

Regeneration—For regeneration ambient air is aspirated by a ventilator and heated to the required temperature by the regeneration heater and subsequently led through the adsorbent bed. The desorbed water vapour is driven out of the

adsorbent by means of the regeneration air flow. The ventilator or blower remains on for a certain time in order to reduce the temperature of the adsorbent to suit the drying process.

THE DBM SERIES—A DRYER WITH INTELLIGENCE

The drying and regenerating processes are widely similar to the DB heat regenerated series, except for several refinements in connection with larger capacities. By combining modules an optimum selection of modules is possible.

SALIENT FEATURES OF THE DBM SERIES

- ★ PLC controlled cycle, checks and controls the process conditions at the same time.
- ★ PLC control stops the cycle at a possible failure in the dryer and shows the deviating condition.
- ★ Cycle control integrates control of pressure, temperature and flow conditions during drying and regeneration switchover.
- ★ Digital display of pressure dewpoint.
- ★ A push button choice between time controlled or dewpoint controlled cycle.

THE DB & DBM RANGE

- ★ DB Series—available in 7 models capacities from 882m³/hr to 5202 m³/hr.
- DBM Series—available in 21 models. capacities from 3302 m³/hr to 9660 m³/hr.
- ★ Pressure dewpoints achievable are -40°C or below.
- ★ Operating pressures 4 kg/cm² to 10 kg/cm².

