

# Dry facts

...from BRY-AIR

## intensifies focus on Asian Economies

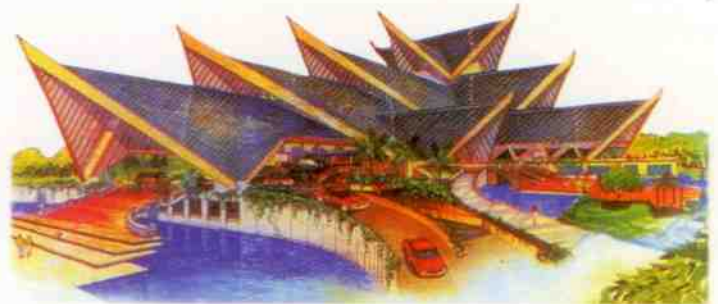


With the Asian economies becoming the growth engines, leading the way into the next century, Bry-Air is intensifying its focus in the Asian region. Bry-Air is a leading name in dehumidification worldwide. Bry-Air had the vision to set up a joint venture in India as Bry-Air India, 15 years ago. In this decade and half, the Indian venture has not only made the Bry-Air name synonymous with dehumidification in India, but also has opened major export markets in the region, leading to establishing a subsidiary plant in Malaysia. The maturing of the India operation in terms of marketing, R & D, and new product development, has led to recasting it, as a fully autonomous operation, sensitive to the specific needs of the region. The name, Bry-Air India is therefore being changed to Bry-Air Asia to connote the enlarged sphere of operation.

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## ECOFRESH™ HEAT RECOVERY WHEEL

Heat Wheels to maintain IAQ in National Theatre, KL, Malaysia



Soon Malaysians will be able to enjoy world-class musicals in a setting comparable to the best in the world. After a long wait, the National Theatre is finally becoming a reality! Scheduled for completion at the end of the year, the National Theatre is being designed to be better than the best in world. Befitting a project of this stature, efforts are not being spared to make it a national pride.

With a capacity to seat atleast 1500 people, the design symbolises Malaysia's rich cultural heritage combined with state-of-the-art facilities.

Bry-Air Malaysia is proud to be associated with this prestigious project.

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## IAQ Seminar in Bangladesh





## Dehumidified silos . . . for safe storage

Silos are huge, cylindrical storage bins used to store large quantities of grains, food products, sugar, plastics, chemicals, fertilizers, and many other items.

Silos are normally made of concrete or steel.

When material is stored in silos, generally it is not



filled up to the top, but some space is left empty for air circulation. This empty space creates its own problem as moisture builds up in the unfilled portion. Due to variation of temperature outside the silos, condensation of water vapour takes place inside the silos leading to :

- ◆ Corrosion of the silo itself.
- ◆ Caking and agglomeration of hygroscopic material stored inside.
- ◆ Increase of microbial activity leading to spoilage of material stored.

Thus, tons of material which is stored inside the



silos are always in the danger of complete spoilage due to moisture build up inside the silos. Spoilage

of stored material can be a big commercial loss since quantity stored is very large.

Conventionally, to avoid moisture build up inside the silos, hot air is pressurised inside from the bottom. This preserves the stored material but is very expensive due to high power consumption.

Also, for powdery material, air at high pressure causes the powder to 'flake off', resulting in product spoilage.

### The **Bry-Air** way to keep the moisture away

It is necessary to keep the air inside the silos dry so that there's no moisture build up inside. One must also be careful that while drying the air, heat is not built up inside as many products are temperature sensitive and require very low dew points.

Also the drying method adopted must be independent



of ambient temperature outside.

The Bry-Air dehumidifier is designed to effectively dry air continuously regardless of ambient condition outside very low dew point.

Regardless of the ambient condition (Night or Day) the Bry-Air desiccant dehumidifier provides dry air inside the silo which is below the dew point of the air outside the silo, thus eliminating the possibility of condensation inside the silo and thereby safeguarding the stored material inside.

The greatest advantage of the dehumidifier is that only a small dehumidifier is needed to do the job. The dehumidifier dries the air in the empty space, thus creating a low vapour pressure causing the moisture within, to move up and being removed by the dehumidifier in a continuous cycle.

Multiple silos can be serviced by a single dehumidifier if required.





# WHEN MOISTURE IS TORTURE !

*In this column we will share with you regularly our experience on major application areas where usage of dehumidification is both extensive and essential.*

## Humidity control helps to preserve food grain in storage.

Post-harvest loss of food grains in storage is estimated to be around 10 per cent and is mainly due to degradation by moisture as well as damage by fungus, insects, pests, rodents etc.

### **Strategy to Minimise Loss During Storage**

Thorough analysis of factors responsible for post harvest loss of food grains viz. inherent characteristics of food grains, their physical and chemical composition, storage practices and socio-economic implications is required prior to the formulation of a strategy to prevent loss during storage food grains.

Major factors responsible for damage, deterioration and losses during storage can be categorised mainly as:

#### **Climatic or Abiotic factors**

- Temperature. ● Relative Humidity.
- O<sub>2</sub> - CO<sub>2</sub> rate. ● Quality of the grains.
- Chemical contamination. ● Transportation practices.

Inter-relationship between biotic and abiotic factors has been well established. Certain combination of factors save the grain from damage, for example, high temperature and low moisture check growth of microbes and reduced O<sub>2</sub>/CO<sub>2</sub> ratio eliminates insect growth during storage.

On the other hand, microbial and insect growth is favoured at a temperature of 28-30 °C and 65-80 per cent relative humidity.

Atmospheric relative humidity (RH) plays a key role in safe storage of food grains as the grain absorbs or desorbs water molecules to maintain an equilibrium with the RH. High temperatures and low RH combination result in desorption of moisture unfavourable for insect and mould growth. Damp condition in the warehouses and silos favours growth of mould, fungii, etc which damage the food grain. Moisture content of grains, also, has a bearing on the storage life due to metabolic and bio-chemical changes. Also, mould growth above 15 percent moisture (at 27 ± 5°C) in grains is related to insect growth at favourable grain moisture content and

#### **Biotic Factors**

- Moisture. ● Respiration and physiology of the grains. ● Pests such as insects, rodents and microbes.

temperature levels.

Fungus invasions in stored grain results in discoloration, reduced germinability, production of mycotoxins like aflatoxin, heating, mustiness and finally total decay.

While none of above factors act in isolation on stored food grain, relative humidity is a major variable. It has been well established that proper humidity control helps to preserve food grains in storage.

#### **Humidity Control using Dehumidifiers**

Dehumidification offers the most simple and cost effective solution of humidity control. Bry-Air Dehumidifiers are designed to provide dry air, regardless of the ambient condition at very low dewpoint. Bry-Air dehumidifiers have been effectively used for safe storage of food grain as well as by many Seed and Food corporations and agencies.





**Bry-Air**

## expands its horizon

Between the Asia operation, headquartered in Delhi and its subsidiary facility in Malaysia, the focus of their autonomous operation will be all of Asia, including China, South East Asia, and the Indian Ocean rim countries from Africa to Australia.

The parent company, Bry-Air Inc. U.S.A., will continue to provide all necessary technology upgrades and will concentrate on the market of America and will continue to enhance its European presence.



CELEBRATING 50th  
ANNIVERSARY  
OF INDEPENDENCE

## KNOW INDIA

### DID YOU KNOW THAT INDIA IS THE MOTHER OF MANY INVENTIONS ?

#### ASTRONOMY

##### MEASUREMENT OF TIME :

India has given the world the idea of the smallest and the largest measure of time.

FROM 34,000TH OF A SECOND TO 4.32 BILLION YEARS.

Krati	=	34,000th of a second
Truti	=	300th of a second
60 Pal	=	1 Ghadi (24 minutes)
2.5 Ghadi	=	1 Hora (1 Hour)
24 Hora	=	1 Divas (1 Day)
7 Divas	=	1 Saptah (1 Week)
4 Saptah	=	1 Maas (1Month)
2 Maas	=	1 Ritu (1Season)
6 Ritu	=	1 Varsh (1 Year)
100 Varsh	=	1 Shataabdi (1 Century)
10 Yug	=	1 Mahayug (4,320,000 years)
Kalpa	=	4.32 billion years

In Surya Siddhanta, Bhaskaracharya calculates the time taken for the Earth to orbit the sun to 9 decimal places (365.258756484 days). The modern accepted measurement is 365.2596 days.

Between Bhaskaracharya's ancient measurement, 1500 years ago and the modern measurement, the difference is only 0.00085 days (0.0002%).

**ECO-FRESH™**  
HEAT RECOVERY WHEEL

## for National Theatre

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Six Eco-Fresh Heat Wheels have been incorporated in the air-conditioning system of the National Theatre to ensure that the indoor air quality standards are maintained and audience does not suffer from discomfort during performances. Along with enhancing the IAQ inside the National Theatre, the Eco-Fresh wheels will also save on utility bills, as the wheels use the exhausted energy to precondition incoming fresh air.



**Bry-Air**

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