

Dry facts

...from BRY-AIR

APR -MAY -JUN '97

VOL.7 NO.2



BRY-AIR MALAYSIA

**Ohio University
does a case study.**

A 22 member delegation from the Ohio State University, USA, visited the Bry-Air Malaysia plant in early March this year, to do a case study on it's operations.

Bry-Air Malaysia is a prime example of a tri-country co-operation, as it is the first and probably, the only Indo-US joint venture in Malaysia.



Set up 6 years ago, Bry-Air Malaysia manufactures and markets a wide range of chemical dehumidifiers, plastics dryers and auxiliary equipments and heat wheels, catering to S.E. Asia market.

Malaysia plant supports an extensive agent network in Thailand, Indonesia, Singapore, Taiwan, Phillipines and Vietnam.

BRY-AIR USA BOOTH AT NPE



**WD 250 - The new upgraded
Wood Dryer**

IMPORTANCE OF IAQ IN HOSPITALS / NURSING HOMES

Nowhere, is the importance of IAQ as critical as in hospitals and health care facilities. Continual advances in medicine and technology necessitate the air-conditioning of hospitals and medical facilities. In many cases, proper airconditioning is a factor in patient therapy. In some instances, it is the major treatment. However the relative high cost of air conditioning has led to inadequate and improperly designed systems, with not enough care to factor in specific requirements for ventilation, filtration and cross contamination.

ENERGY MANAGEMENT IN HOSPITALS AND IAQ WITH ENERGY / HEAT WHEELS

Higher fresh air ventilation needs translate into higher outdoor air changes per hour, which means more air-conditioning loads and higher capacity plants to be installed. This leads to higher first cost and higher operating costs.

Hospitals operate 24 hours a day year round, require sophisticated backup systems in case of utility shutdowns and use large quantities of outdoor air to combat odors and dilute micro-organisms. Hence, effective management of energy systems becomes imperative.

Increasing ventilation rates translates into two ways -

An improved indoor environment and significant higher utility bills for the owners.

The solution is the use of energy recovery devices of which the energy/ heat wheel is the most appropriate.



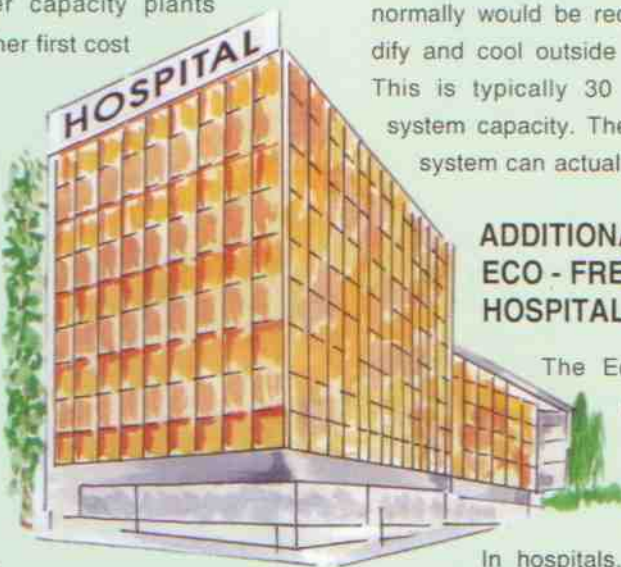
HOW DOES THE ENERGY / ENTHALPY WHEEL WORK ?

The Energy Wheel preconditions fresh outside air before it is introduced to a building. The system can easily be tapped into an existing ventilation system. A portion of the air that would normally be recirculated through the system is exhausted through the wheel

and fresh air is introduced into the building in its place. The cost to provide high levels of fresh air ventilation becomes minimal compared to the normal heating / cooling requirements of the building.

The potential benefits are numerous :

- Current standards for outside air ventilation can be met or exceeded with minimal energy cost impact on the building.
- Inlet air is dehumidified by the desiccant wheel, allowing the rest of the ventilation system to run dry. As a result, indoor humidity can be maintained well below the conditions that would favour the growth of mould, mildew and other microbial contaminants.
- The need for cooling capacity that normally would be required to dehumidify and cool outside air is eliminated. This is typically 30 to 50% of total system capacity. The initial cost of a building's cooling system can actually be reduced with a wheel system.



ADDITIONAL BENEFITS OF THE ECO - FRESH WHEEL FOR HOSPITAL APPLICATION

The Eco-Fresh energy wheels have a coating which provides selective adsorption and eliminates cross contamination of bacteria and airborne contaminants.

In hospitals, clean rooms and animal houses where stringent control of IAQ is desired, these wheels provide the best options.

ECO-FRESH™
HEAT RECOVERY WHEEL

Energy Recovery + IAQ

The Eco-Fresh Heat Wheel uses custom-made metallic honey comb matrix coated with a special grade desiccant 'EcoSorb 340' adsorption material. Pore opening is so structured that substantially particulate near the water molecules size of 2.8 \AA are condensed and trapped given up. Larger pollutants (say over 4 \AA) are excluded. Eco-Fresh provides strict separation of the airflows, preventing carry-over of bacteria and dust particles from the exhaust air side to the supply side. As a result, the contaminants remain in the exhaust air stream. In-built purge sector flushes out the flutes before they enter the supply air side and eliminates cross contamination.

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.

SEASONING IN ALL SEASONS

TIMBER / WOOD DRYING IN THE Bry-Air WOOD DRYERS

In view of rapidly shrinking natural forests, the world has by and large, to depend on fast growing plantation species for the requirements of wood. Though some species like eucalyptus, poplar, rubber wood etc. have great potential for producing standard quality sawn timber, they pose several problems during drying.

PROBLEMS OF DRYING PLANTATION WOOD

High residual growth stresses is found on small girth logs from short rotation plantation grown timbers. Such wood is prone to excessive warping, collapse and even splitting along the pith during sawing. Transverse shrinkage, isotropy and excessive longitudinal shrinkage, are other most striking features of juvenile wood. Longitudinal shrinkage in juvenile wood can be as high as 2%. Such a high longitudinal shrinkage makes the drying process difficult and leads to serious defects in wood such as splitting, warping, cupping, twisting etc. during drying.

Timber drying is a highly energy intensive process. It is estimated that 60-70 percent of energy required for timber manufacturing is for drying.

Natural drying is the simplest drying method but suffers from disadvantage of unpredictability, maintaining of large stock and space, and above all inability to achieve low moisture contents.

Steam kilns are energy intensive, require skilled man power for operation and maintenance of boilers, pollution hazards and defects associated with high temperatures.

Refrigeration type dehumidifiers, again are not suitable for operating over 50 - 55°C. Slow rate of drying and high condensing pressure often causes breakdown of the

unit. Also RH below 45% is essential to maintain vapour pressure gradient. To maintain low RH, the unit has to be operated with low suction temperature which increases



energy consumption considerably. Thus, the wood processing industry needed an alternative technology which overcame the shortcomings. Bry-Air India has designed and manufactured a dehumidification based wood dryer which seasons / dries all types of wood at an accelerated rate without causing damage to the wood. *After one year of rigorous testing, the FRI (Forest Research Institute) Dehradun, has given it's stamp of approval for the Bry-Air Wood Dryer. FRI has certified the Bry-Air Wood Dryer as the first of it's kind in wood drying technology and recommended its usage for quality drying seasoning and manufacturing.*

SEASON IN ALL SEASONS

The Bry-Air Wood Dryers allows seasoning/drying all types of wood, at site, irrespective of the weather. Compact, mobile, self-contained and modular, the dryer is designed to handle large as well as small quantities of wood. It is . . .

- eco-friendly . . . user friendly.

- easy to install, operate and maintain. Ensures fastest drying without product spoilage. In fact, the drying time can be optimised at site for any type of wood by dialing

(regulating) the drying intensity and temperature.



ADVANTAGES OF TIMBER DRIED BY BRY-AIR WOOD DRYER

Wood dried and seasoned in the Bry-Air Wood Dryer has some extra advantages.

- Increased wood / timber strength.
- Increased resistance to fungal and insect growth.
- Easier to machine and glue.
- Remains dimensionally stable during assembly and finishing. Better durability, particularly in wood furniture.
- Enhances finish of varnishing, paint and treatment.

ENGINEERED TO PROVIDE QUALITY AIR



Engineered Dehumidifier MVB75E
for bagging of Caustic soda.



Compressed
Air Dryer HOC
(Heatless) type
for polyester
chips drying.



Engineered
Compressed Air Dryer.



CELEBRATING 50th
ANNIVERSARY
OF INDEPENDENCE

KNOW INDIA

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

GEOMETRY

INVENTION OF GEOMETRY

The word 'Geometry' seems to have emerged from the Indian word 'Gyaamiti', which means measuring the Earth. The word 'trigonometry' is similar to the word 'Trikonmiti', meaning measuring triangular forms. Euclid is credited with the invention of Geometry in 300 BCE while the concept of Geometry in India emerged in 1000 BCE from the practice of making fire altars in square and rectangular shapes. The treatise of *Surya Siddanta* (4th Century CE) describes amazing details of trigonometry which were introduced to Europe 1200 years later, in the 16th Century, by Briggs.

THE VALUE OF PI (Π) IN INDIA

The ratio of the circumference to the diameter of a circle is known as Pi, which gives its value as 3.14592657932. The old Sanskrit text *Baudhayana Shulba Sutra* of the 6th Century BCE mentions this ratio as approximately equal to 3. Aryabhatta in 499 BCE worked out the value of Pi to the 4th decimal place, as $3 \frac{177}{1250} = 3.1416$. Centuries later, in 825 CE, the Arab mathematician, Mohammed Ibna Musa, said that 'this value $\frac{62832}{20000}$ has been given by the Hindus (Indians)'.

THE PYTHAGORAS THEOREM* OR THE BAUDHAYANA THEOREM ?

The so called Pythagoras Theorem* - the square of the hypotenuse of a right angled triangle is equal to the sum of the square of the other two sides - which was worked out earlier by the Indian mathematician, *Baudhayana*, in *Baudhayana Shulba Sutra*, a treatise dating back to the 6th Century BCE. He describes it as 'the area produced by the diagonal of rectangle is equal to the sum of the area produced by it on two sides'.

* The theorem was enunciated by Euclid but attributed to Pythagoras by Greek writers.

Bry-Air

BRY-AIR (MALAYSIA) SDN. BHD.

Lot.11 Jalan P/7, Bangi Industrial Estate,
43650, Bander Baru Bangi
Selangor-Malaysia.
Phone : 60-3-825 6622
Fax : 60-3-825 9957
EMail : ssf@bryair.po.my

BRY-AIR INC.

Route 37 WEST,
Post Box 269,
Sunbury, Ohio 43074, USA.
Phone : 614-965-2974
Fax : 614-965-5470
E-Mail : bryair1@aol.com

BRY-AIR (INDIA) PVT. LTD.

20, Rajpur Road
Delhi 110 054, India.
Phone : 91-11-2912800
Fax : 91-11-2915127
E-Mail : bryair@glasdl01.vsnl.net.in