



# ECOPLAST

...News from

**Bry-Air**

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## Signs of Future on display at Bry-Air Booth in Plastindia 2000



Delhi, India is all set to witness the grand commencement of the Plastindia 2000 show. To be held from 19th to 24th February 2000, at Pragati Maidan, New Delhi, India, this mega show is billed to be the second biggest trade show of its kind in the world.

We invite you to this week long journey in to the future and look forward to touching base with you at our booth No. M-8 Hall No. 10 at Plastindia 2000.

On display will be Bry-Air's entire plastics auxiliary range. As always, the Bry-Air showcase will present the best, the latest, and the most reliable and cost effective solutions for the plastics industry.

*In case you miss visiting us at Plastindia, we are always available at [www.bryair.com](http://www.bryair.com).*

### Plastindia 2000



NEW MILLENNIUM



NEW WORLD



NEW CHALLENGES



NEW VISION

Visit us at M-Plas Show at KL Malaysia Oct 5-8, 2000.

#### ► DRYING SYSTEMS

- Hot Air Dryers
- Dehumidifying Dryers
- PET Dryers



#### ► CONVEYING SYSTEMS

- Auto Loaders
- Centralised Conveying System



#### ► DOSING & BLENDING SYSTEMS

- Volumetric Dosers
- Gravimetric Blenders



#### ► TEMPERATURE CONTROL SYSTEMS

- Mould Temperature Controllers
- Chillers



#### ► SPECIALITIES

- Mould Dehumidification Systems



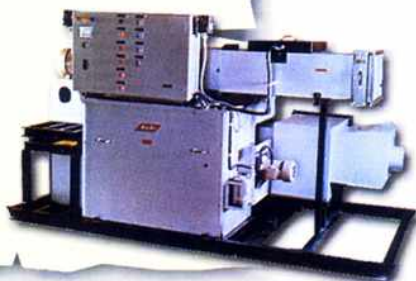
## Bry-Air Plastics Dryers for UV resistant HDPE pipes



**U**AC Pipes Sdn. Bhd, Malaysia manufacturer of UV resistant HDPE pipes was facing problems in drying HDPE with carbon black.

The HDPE material is blended with carbon black to make the pipes UV resistant. Carbon black, being highly hygroscopic, did not dry completely when dried in hot air dryer (the conventional method of drying). The result was poor internal and external finish on the pipes due to improper drying of resins. Defects like orange peel effect, air bubbles, craters etc. led to large rejection of the material.

To solve their problem UAC Pipes have installed a Bry-Air Large Volume Dehumidifying type Plastic Dryer LVD-10 with an auto loader VLS-1500 along with drying hopper model HP-400. The unique heat pipe based heat recovery system, 'built-in' the LVD allows a 30% reduction in the reactivation energy bill, thus allowing for a better quality finish at a lower input cost.

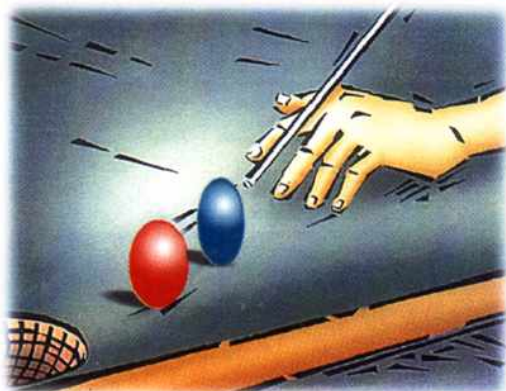


**M**anikya Plastics, a leading seamless solid walled HDPE pipe manufacturer, opted Bry-Air RD Series dehumidifying dryers to dry the HDPE resin prior to processing it for pipes.

Now Manikya Pipes can stomach practically any liquid or gas, of virtually any nature - be it acidic, caustic or corrosive which flows through it.

Manikya emphasizes that Quality virgin raw materials, quality HDPE extruders, quality dies, quality testing facilities, supported by quality drying make Manikya's HDPE pipes tough and resilient to even harsh operating conditions.

## Down the Memory lane



The modern plastic industry began in the 1860's with a competition in America to find a better billiard ball. A price of \$ 10,000 was put up for anyone who could find a cheap replacement for ivory balls. The winner was John Wesley Hyatt, an American inventor who made a ball from a substance he called Celluloid. Uses of celluloid were quickly found—spectacle frames, knife handles, wind screens for early automobiles and photography films. Without Celluloid the film industry could never have started.

Celluloid gave Leo Baekeland, an American industrial chemist, the idea to create the first completely synthetic material. He achieved success in 1907 by mixing phenol (carbolic acid) and the gas formaldehyde-producing a plastic he called Bakelite.

# Drying PET is the key to moulding productivity

A few decades ago, when the PET Resin (Polyethylene Terephthalate) was introduced, very few people knew its drying requirements.

Starting with the beverage bottle, PET is now being extensively used for packaging personal care, food and many other items.

Produced by the biaxially oriented blow moulding process, PET bottles combine outstanding performance and aesthetic qualities. They give superb crystal clear clarity needed to show any product to advantage. They have excellent carbon retention properties and a good barrier to oxygen. Light to handle and transport. And safe to health.

However, for PET to have all the qualities for which it is well known, the PET resins have to be absolutely moisture free prior to processing.

As the market for PET products continues to grow so does the need for a better technical understanding of its processing requirements. The most critical of these are proper drying equipments.

## The Drying criteria for PET

When PET is used for moulding beverage and other packaging bottles, its molecular weight, as indicated by intrinsic viscosity (I.V.), is of primary importance. Maintaining a relatively high I.V. is essential to produce good quality bottles.

PET resins are highly hygroscopic (and when received, may contain about 0.05% moisture by weight). They absorb moisture more quickly than other plastics resins. This affinity of the PET resin towards moisture makes it one of the most difficult resins to dry. Even traces of moisture present in the resin can result in splay, internal bubbles, loss of clarity and strength in the finished part or product.

Hence, proper drying of the PET resin is the first critical step towards the final required quality of the moulded product. The resin must be dried so that it may contain less than 0.005% moisture prior to moulding

Drying PET requires stringent control over dewpoint, drying temperature, residence/dwell time and air flows.



To achieve this very low moisture content, the resin must be dried at 180°C (350°F) and exposed to air having a moisture content of  $-40^{\circ}\text{C}$  ( $^{\circ}\text{F}$ ) dewpoint at a flow rate of 1ft/sec. This low dewpoint and high temperature create "pressure dewpoint differential" i.e. conditions are created within and around the resin that it "sweats or boils" out the moisture.

## Spot the Difference

Say **YES** to  $-40^{\circ}\text{C}$  dewpoint dryers and **NO** to those with  $-20^{\circ}\text{C}$  dewpoint.

At  $-20^{\circ}\text{C}$  dewpoint PET resin cannot be dried properly and moisture is retained by the resins!

The residual moisture retained by the PET resins results in hydrolysis of the PET resins in screw barrel of the processing machine, due to high heat and pressure. This degrades the polymer chain of the resins and causes loss in chemical and physical properties of the end product.

Due to high moisture, the Acetaldehyde content increases which results in reduced shelf life of the contents stored in the PET bottles. Typically, beverages packed in PET bottles with high Acetaldehyde content get a bitter taste.



Resins dried at  $-20^{\circ}\text{C}$  Dewpoint



Resins dried at  $-40^{\circ}\text{C}$  Dewpoint

World's biggest suppliers of raw materials e.g. Eastman Kodak, Sabic, Reliance etc. recommend drying PET at  $-40^{\circ}\text{C}$ .

## The F 'n' F PET Drying System from Bry-Air

Drawing on its long experience in drying various type of plastics resins, specially PET, Bry-Air has designed the ultimate PET Drying Package – the Bry-Air F'n'F PET Dryer, which ensures the strict moisture control required to successfully process PET.

The Bry-Air F 'n' F PET Drying System packages a multibed desiccant dehumidifying dryer guaranteed to maintain  $-40^{\circ}\text{F}$  dewpoint regardless of ambient conditions with a unique closed loop cool down cycle design along with double skin insulated Hopper in a single unit.

**PET resins dried at  $-20^{\circ}\text{C}$  dewpoint retain 8 times more moisture than PET resins dried at  $-40^{\circ}\text{C}$  dewpoint, which can be disastrous for the end product**

## Bry-Air BPD Plastic Dryer



On display at  
Bry-Air Booth at  
Plastindia 2000

### SALIENT FEATURES

- Reliable, top of the line, state-of-the-art, cost effective.
- CNC manufactured with powder coated finish.
- Smaller foot print, easy to install, almost maintenance free.
- Digital display of operation, fault, temperature status.
- Highly accurate microprocessor based PID controller.
- Energy Efficient.
- -40°C Dewpoint assured, dries toughest of hygroscopic resins.



## Combo Dryer Package

(Dryers + Hoppers + Auto Loaders)

## ECC DRY Plastic Dryer Range



Visit us at [www.bryair.com](http://www.bryair.com)

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**PALAWA**  
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**Bry-Air**

## Plastics Auxiliary Equipment

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