

**Bry-Air**®

# Prevent Corrosion of Electronic Cards and Electrical Components

[www.bryair.com](http://www.bryair.com)

**Pulp and Paper**





**Designed for Removal of Corrosive Gases such as  $\text{Cl}_2$ ,  $\text{SO}_x$ ,  $\text{NO}_x$ ,  $\text{H}_2\text{S}$ ,  $\text{NH}_3$ , etc. inside control room to prevent corrosion**

## Why Airborne Molecular Contamination Control in Process Control Room?

The pulp and paper industry has been at the forefront of inducting computerized process control for all its operations. Being a highly competitive, energy & chemical intensive industry, it has become increasingly dependent on sophisticated electronic process control system in order to maximize operating efficiencies and productivity.

However, the operating conditions are often not very conducive to such sophisticated controls. High humidity, corrosive gases and corrosion causing particulate, which today have become characteristics of almost every paper plant environment endanger the operation of process control room and mission critical room in above.



## Digestion Process: Main Generator of Corrosive Gases

Digestion process is the primary generator of corrosive gases like Hydrogen Sulphide ( $\text{H}_2\text{S}$ ), Sulphur Dioxide ( $\text{SO}_2$ ), Mercaptans and Dimethyl Sulphide ( $\text{C}_2\text{H}_6\text{S}$ ). It has been observed that hydrogen sulphide levels of 1 to 5 PPM typically exist throughout a pulp and paper plant environment, depending upon the wind directions on a particular day. If the plant has a bleach plant, then Chlorine ( $\text{Cl}_2$ ) and Chlorine Dioxide ( $\text{ClO}_2$ ) will also be present around paper machine areas. In addition to this, boiling and waste water treatment processes also contributes fair amounts of ( $\text{SO}_2$ ), Nitrogen Oxides, ( $\text{Cl}_2$ ) and ( $\text{H}_2\text{S}$ ) contamination. These gases alone, or in combination with humidity and/or with temperature, react with copper and silver in electronic circuit boards, server cards, cooling equipments, datacom connections resulting in micro-electronic corrosion/malfunction leading to downtime losses in control rooms and motor control centres.

Generally, control rooms, rack rooms and Motor Control Centres (MCC) are located throughout the plant. Areas where critical controls involving lots of electronic cards are generally found as:

- Wood-yard area
- Paper machine area
- Producer gas plant
- $\text{ClO}_2$  plant
- Power boiler / Turbine generator area
- Evaporators / Recovery Boiler / Caustic area
- Digester area
- Power house CFBC plant
- Sewage treatment sludge dewatering plant

All the above mentioned areas house a lot of electrical/electronic card for control of numerous operations. Unlike computer/electronic rack rooms, most of the MCC rooms are not air-conditioned. Various corrosive gases generated during the pulp and paper making process such as  $\text{H}_2\text{S}$ ,  $\text{SO}_x$ ,  $\text{NO}_x$ ,  $\text{Cl}_2$ ,  $\text{NH}_3$ , Mercaptans and  $\text{C}_2\text{H}_6\text{S}$  easily seep into Controls/Switchgear rooms thus leads to electronic corrosion.

Uncontrolled temperature and high humidity, dust and corrosive gases, trigger and endanger the operation of virtually all electronic devices. Failure in maintenance of acceptable gas levels can result in extensive damage to metal components of electronic equipments, which can result in:

- Downtime losses
- Circuit failure
- Silver and copper corrosion
- Increased maintenance cost

## General Recommendations

In Control/Switchgear rooms of a paper plant, one needs to provide minimum 3-6 air changes per hour, to attain approximately 2.5 to 5 mm WC positive pressure inside the room. By this method, there will be a net outflow of clean air from inside the room to outside atmosphere only, thereby eliminating the leakage of outside contaminated air into the room.

## Why Bry-Air?

Bry-Air is the only company in India providing the complete spectrum of Gas Phase Filtration products and services from pre-installation assessment of environment to the post-installation evaluation of remaining media life and AMC of equipment.

- The world-class technology and systems backed by Bry-Air in-house R&D and testing labs. Our labs are approved by the Ministry of Science and Technology, Government of India. The tests are conducted as per ISO/ASHRAE Standard 145.1 and BSR/ASHRAE Standard 145.2/ISO Standard 11155-2 guidelines.
- Helps meet the ISA standard 71.04-2013 for corrosion and gases, IEC standard and environmental standards followed by electronics manufacturers
- UL certified Granular and Honeycomb Chemical Media for the highest standard of safety and quality.

## Services Offered

### Bry-Air Atmospheric Corrosivity Monitoring

Bry-Air's ACM measures the corrosion reactivity levels of airborne gaseous contaminants, room temperature, RH and optionally the differential pressure, to give the complete corrosion parameters at any Data Center, Server Room and Control Room. It is a device that can be quickly deployed in a confined space feeding you the results in real-time and assisting you to take corrective actions thereof.



Atmospheric Corrosivity Monitor



Corrosion Classification Coupon

**Help meet ISA 71.04 – 2013 Standards of Contaminants Free Air**

# Superior Air Quality Leading to Smaller Production Down Time

## Corrosion Classification Coupon

The Corrosion Classification Coupon (CCC) provides a direct, quantitative measure of the overall corrosion potential of an environment. Evaluates the performance of GPF systems in post installation test and determines environmental corrosivity rate.

## Laboratory and Technical Support Services

Bry-Air offers comprehensive technical and service support to its customers. Our labs successfully provide in-house testing % of Remaining Media Life (RML) for both impregnated granular media and honeycomb chemical filter. Test reports are used to determine various critical factors such as media/filter replacement frequency and periodicity, variation in surrounding atmosphere toxicity and media/filter inventory. We also replace spent chemical of any make of GPF and undertake upkeep of systems under AMC/AIMC.

## Corrosivity Levels of Environment as per ISA 71.04 - 2013 Standard

Class	Severity Level	Cu/Ag Reactivity Rate/Month	Comments
G1	Mild	$<300 \text{ } \ddot{\text{A}} = \text{Cu}$ $<200 \text{ } \ddot{\text{A}} = \text{Ag}$	An environment sufficiently well-controlled such that corrosion is not a factor in determining equipment reliability.
G2	Moderate	$<1000 \text{ } \ddot{\text{A}}$	An environment in which the effects of corrosion are measurable and corrosion may be a factor in determining equipment reliability
G3	Harsh	$<2000 \text{ } \ddot{\text{A}}$	An environment in which only specially designed and packaged equipment would be expected to survive. Specifications for equipment in this class are a matter of negotiation between user and supplier.
GX	Severe	$>2000 \text{ } \ddot{\text{A}}$	An environment in which there is a high probability that corrosive attack will occur. These harsh levels should prompt further evaluation resulting in environmental controls or specially designed and packaged equipment.

## Products

### Bry-Air EcoScrub Gas Phase Filtration Systems - BPU series

Granular media based deep/thin bed systems are suitable for applications where a higher concentration of corrosive gases is prevalent in the environment.

- Self-contained re-circulatory and fresh air units, offered, both in horizontal and vertical configurations
- Matches with the specification of leaning consultants like EIL, PDIL, TCE, Technip, TOYO and industrial consultants

### Bry-Air Granular Media - BRYSORB™ Series

The BRYSORB™ series media is specially designed to safely deliver gas removal effectiveness on a variety of target gaseous contaminants found in the industrial applications.

- Neutralizes almost all corrosive contaminants like Hydrogen Sulphide ( $\text{H}_2\text{S}$ ), Sulphur Dioxide ( $\text{SO}_2$ ), Ammonia ( $\text{NH}_3$ ), Nitrogen Oxides ( $\text{NO}_x$ ), etc. as a combination of activated carbon and activated alumina impregnated with proprietary chemicals
- Removes gas phase contamination by using a wide range of proprietary chemical media

### Bry-Air Honeycomb Chemical Filters - DRISORB™ Series

DRISORB™ series macroporous honeycomb matrix technology-based chemical filter facilitates highly efficient chemisorption process by holding the maximum possible amount of chemical media for filtration process for a given size and geometry of the filter and has maximum air carrying capacity for a given pressure drop.

- Neutralizes even an ultra-low concentration of gaseous contamination in the air stream
- Provides the highest standard of safety and quality as they are UL certified



## Bry-Air®

### Gas Phase Filtration



### BRYSORB™ Chemical Media







508      508 BL      515      520      525

Backed by BRYCARE™ SERVICE



### Bry-Air®

### Control Room Air Purifier

DRISORB™ Honeycomb Chemical Filter



508      508BL      515      520      525

CLEAN AIR

CONTAMINATED AIR

# Revolutionary Honeycomb Filter for Prevention of Electronic Corrosion



**Bry-Air®**

Leaders in Dehumidification... Worldwide

# One Stop Shop...

For all Gas Phase Filtration needs

Data Center Air Purifier



Control Room Air Purifier



Odour Control Unit



Deep Bed System



Thin Bed System



Honeycomb Chemical Filter - DRISORB™ series



Granular Media - BRYSORB™ series



Atmospheric Corrosivity Monitor



Corrosion Classification Coupon

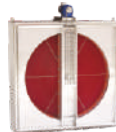


## Key Application Areas

- Petrochemical & Refinery
- Fertilizer/Chemical Plant
- Pulp Processing
- Diagnostic Labs
- Museums & Libraries
- Sewage Treatment Plant
- Fruits & Vegetable Storage
- Data Centers
- IT Server Rooms
- Telecom Towers
- Autopsy Rooms
- Animal Research Labs
- Mortuary Rooms

and many more...

## Our Other Product Range

**Desiccant Dehumidification**  
for humidity control & drying**High Temperature Heat Recovery Wheel****Adsorption Chillers**  
Use low grade waste heat for **Energysmart Green Cooling****Plastics Auxiliaries** for Drying, Conveying, Blending, Heating & Cooling and Mould Dehumidification**Bry-Air®**

Leaders in Dehumidification... Worldwide

**Corporate Office:**  
21C, Sector-18, Gurugram 122015  
Phone: +91-124-4091111  
Fax: +91-124-4091100  
E-mail: bryairmarketing@pahwa.com

**Registered Office:**  
20, Rajpur Road, Delhi 110054  
Phone: +91-11-23906666  
Fax: +91-11-23906600  
Web: www.bryair.com  
CIN: U74210DL1981PTC012456

City	Phone
DELHI	+91-11-23906666
CHANDIGARH	+91-172-4678806/7
MUMBAI	+91-22-24935155/24947475
VADODARA	+91-265-2351493
KOLKATA	+91-33-22814841/22814877
BENGALURU	+91-80-43025562/3/4/5
HYDERABAD	+91-40-27154243
CHENNAI	+91-44-48606141/2/3
KOCHI	+91-484-2395940

**E-mail**  
enquire@pahwa.com  
bryairchandigarh@pahwa.com  
bryairmumbai@pahwa.com  
bryairbaroda@pahwa.com  
bryairkolkata@pahwa.com  
bryairbangalore@pahwa.com  
bryairhyderabad@pahwa.com  
bryairchennai@pahwa.com  
bryairkochi@pahwa.com

**BRY-AIR (USA)**  
Phone: +1-740-965-2974  
Fax: +1-740-965-5470  
E-mail: bryair1@bry-air.com  
Website: www.bry-air.com

**BRY-AIR (CHINA)**  
Phone: +86-21-34126537  
E-mail: info@bryair.com.cn  
Website: www.bryair.com.cn

**BRY-AIR (MALAYSIA)**  
Phone: +60-3-89256622  
Fax: +60-3-89259557  
E-mail: bryair@bryair.com.my  
Website: www.bryair.com.my

**BRY-AIR (BRAZIL)**  
Phone: +55-41-36982222  
E-mail: contato@bryair.com.br  
Website: www.bryair.com.br

**Country**  
**BRY-AIR (UAE)**  
**BRY-AIR (PHILIPPINES)**  
**BRY-AIR (INDONESIA)**  
**BRY-AIR (VIETNAM)**  
**BRY-AIR (NIGERIA)**  
**BRY-AIR (SWITZERLAND)**  
**BRY-AIR (BANGLADESH)**

**Phone**  
+971-6-5574622  
+63-2-88078435/6/7  
+62-21-79199023  
+84-8-39856498  
+234-8097276772  
+41-91-6830971  
+880-1819409100

**E-mail**  
support@bryair.ae  
mail@bryair.com.ph  
indomark@bryair.com.my  
vietmarketing@bryair.com.my  
bryairnigeria@pahwa.com  
info@pro-kon.ch  
bryairbangladesh@pahwa.com

**Website**  
www.bryair.com/uae  
www.bryair.com/philippines  
www.bryair.com/my/indonesia  
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Innovation is life

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