Treated Fresh Air Unit (TFA)
The Air is Changing . . . Are you?

You can’t ignore it any longer!

Some of the World’s TALLEST, BIGGEST, LARGEST Projects maintain IAQ with Ecofresh inside!

- Qianxi Plaza, China
- G+3 Life Line Hospital, UAE
- EcoSedi, Brazil
- Central Gwinnett High School, USA
- Goodwood Hotel, Malaysia
- Prestige Palladium, India
- Solaire Manila, Philippines

IAQ ….

You and Your Building may not be Breathing Right! It could be a ‘Sick Building Syndrome’…

Sick Building Syndrome (SBS), an outcome of poor IAQ (Indoor Air Quality), is the condition of a building in which more than 20% of the occupants suffer from adverse health effects, but with no clinically diagnosable disease present. IAQ refers to the physical, chemical and biological characteristics of air in the indoor environment within an occupied building. IAQ relates to the quality of air that we breathe for almost 80% of our life—the time we spend indoors.

Poor IAQ and SBS reports adverse consequences, other than occupational health problems, as loss of productivity and legal liability.

- Productivity loss of around 10% is identified in buildings with poor IAQ.
- Legal challenges are on the rise, the onus being on facility owners, design consultants, architects etc.

Meeting ASHRAE IAQ Standards means more Air-Conditioning Tonnage and more Energy…

Meeting ASHRAE® 62+, provides the necessary fresh air for building occupants; however presents a tough challenge to the HVAC engineer. The outdoor air at a higher design level needs to be conditioned to the level of the indoor design condition, which increases the air conditioning tonnage considerably. The recurring energy expense is another matter of concern.

**ENERGY COST** vs **IAQ**

Cut down the Energy Costs

Thus, **Cost Effective Ventilation** i.e., Indoor Air Quality (IAQ) with energy conservation has become the fundamental design goal of HVAC Designers.

Today, almost all new projects are designed to include greater amounts of fresh air in the HVAC systems without a significant energy penalty by incorporating Energy Recovery.

*American Society of Heating, Refrigeration and Air-conditioning Engineers.*

The current standard uses a combination of number of people and floor area as a basis to calculate fresh air...
**Design Your Air...** Feel the Winds of Change with the **FLEXAIR™ TFAs Series**

- The Next Generation of Fresh Air Units

>>> Unique Features >>> Extra advantage >>> Enhanced Energy Savings

**FlexAir** offers all the prerequisites for creating a ventilation system with the lowest running costs possible to suit your application with the added advantage of Energy Recovery which cuts down the aircon costs.

The new **FlexAir** Treated Fresh Air Units with **Ecofresh** Molecular Sieve Coated Heat Wheel inside provides a complete solution for IAQ and Energy Saving in a single unit, with the option to add modules for cooling, heating, humidification, high efficiency filtration, mixing, sound attenuation, etc.

**How Does the **FLEXAIR™** Work?**

The heart of the **FlexAir** Treated Fresh Air Unit is the **EcoFresh** desiccant coated energy recovery wheel, which slowly rotates between its two sections.

In one section, the stale, conditioned air is passed through the wheel, and exhausted in the atmosphere. During this process, the wheel absorbs sensible and latent energy from the conditioned air, which is used to condition (cool / heat) the incoming fresh Air in the other section, during the second half of its rotation cycle. Thus, you can have more fresh Air at lower humidity levels and energy costs inside your conditioned space.

**Benefits of EcoFresh**

- **Beyond Payback**
- **Enhanced Energy Saving**

- Almost no cross contamination.
- Over 80% energy recovery both latent and sensible. Ideal for tropical climates where latent loads are 2-3 times the sensible load.
- Total energy recovery, recovers both latent and sensible energy.
- Special, adjustable purge section rules out cross contamination of air stream. (less than 0.04%).
- Special labyrinth sealing arrangement ensure no cross leakage of air stream between the supply and exhaust section.
- Most advanced technology.
- Certified / Tested in international labs.
- Wheels edges hardened to suit marine / coastal application needs.
- Best LCC (Life Cycle Cost).

**Why FLEXAIR™**

- Ensures great Building IAQ
- Reduced Aircon and thus, Energy Costs
- Helps qualify for LEED Certification

**EcoFresh Heat Wheels from 270mm deep are AHRI Certified**

- AHRI certification help ensure HVAC product perform as rated. In order for a piece of equipment to be certified, its rating and performance must meet or exceed the applicable AHRI Standard for Rating.

*Air-Conditioning and Refrigeration Institute*  
*270mm deep (MS Series)*

**FlexAir TFAs Series**

- Ensures good IAQ in Hotels, Auditoriums, Multiplexes and other large air-conditioned spaces!
- FlexAir TFAs are perfect for cold and dry climates as well as hot and humid climates. FlexAir TFAs helps to maintain IAQ and humidity in conditioned areas like:
  - **Hospitality** – Hotels, Restaurants, Pubs, Bars, Discoteques . . .
  - **Healthcare** – Hospitals, Nursing Homes, Operation Theatres, Nurseries, Burn Wards . . .
  - **Commercial Areas** – Supermarkets, Departmental Stores, Office Buildings, Conference Facility . . .
  - **Educational and Recreational Areas** – Schools, Auditoriums, Bowling alleys . . .
  - **All other conditioned spaces . . .**

**Ideal for Healthcare and Pharmaceutical industry**

The requirement of fresh and clean air is very high in Healthcare and Pharmaceutical installations. The expression “Air handling unit in hygienic design” means that it must be possible in an easy and effective way, to clean these units’ exterior and interior parts. It should be designed in a way that prevents growing of bacteria. It is also very important to design the complete unit to make it possible to inspect and clean between the different section parts like coils and heat exchangers.

**FlexAir** meets all the criteria as it is designed and manufactured using selection of materials to comply to Hygiene needs!
**NEW MODULAR DESIGN . . . MORE MODEL OPTIONS**

The new design allows for several functions to be placed in the same casing. The FlexAir series has a wider range to cover the flow range better making it possible for you to easily select the right unit with the lowest LCC.

**HIGHLY RELIABLE OPERATION**

Assured problem free operations even under tough circumstances as a result of solid construction with tight sealing between supply and exhaust air ensures minimal leakage.

**WIDEST RANGE**

With almost 9 models available for CFM up to 14000, one has the flexibility to choose the right model resulting in better performance and lower LCC.

**BEST TECHNOLOGY IN CASING MANUFACTURING**

The DRI TFA is manufactured in accordance with the best technology in casing manufacturing. With 0.8 mm sheet on inside and outside, the design is very sturdy and results in better lower leakage class.

**UNIQUELY DESIGNED CONNECTION SYSTEM**

The unique design makes it possible for the assembler to choose from two different ways of connection when he assembles the unit in the machine room in concealed PG joints and flange connections with strips.

**VERY LOW PRESSURE DROPS**

All functions like coils, heat exchangers etc. are optimised to give lowest possible pressure drop in proportion to highest possible efficiency resulting in very low LCC.

**TIME TESTED RELIABILITY**

The FlexAir TFA is the manifestation of DRI’s experience in the field of air handling technology and over 200 man years of R&D and experience in manufacturing the world class Energy Recovery Wheels.

**HIGH QUALITY STANDARDISED FILTERS**

Deep folded bag filters with big filter areas and good sealing. The good tightness ensure clean air supply to the room is of high quality. Tool free access for easy cleaning.

**SELECTION SOFTWARE**

The Selection Software is one of the most user friendly programme. Selection becomes easy, quick, accurate and generates GA diagrams and all technical data at a click of a finger.

**SPACE SAVING DESIGN**

Compact design integrating all components in a single unit.

**EASY TO MAINTAIN FAN ASSEMBLY**

Tool free access to fan assembly. Fan assembly slides out for servicing with a quick disconnect system. Saves time and money! Reliable solid transmission construction saves belts and bearings.

**LCC LIFE CYCLE COST**

Investment + Running cost

**IAQ + ENERGY SAVING**

TFAs are designed to provide IAQ plus Humidity Control plus Maximum Energy Saving

**LEAKAGE CLASS**

<table>
<thead>
<tr>
<th>Leakage Class</th>
<th>Maximum Leakage rate l/s m²</th>
<th>Filter Class (EN 779)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3.96</td>
<td>F5-7</td>
</tr>
<tr>
<td>J</td>
<td>1.32</td>
<td>F8-9</td>
</tr>
</tbody>
</table>

**All sizes of the FlexAir (except size 060 and 100) has filters in standard dimensions making maintenance and stocking of spare filters easier. A big advantage for customers those who wish to keep a stock of filters.**
**FLEXAIR™ TFAs**

**New Modular Design**

The new design allows for several functions to be placed in the same casing. The FlexAir series has a wider range to cover the flow range better making it possible for you to easily select the right unit with the lowest LCC.

**Cross-sectional Area and Number of Filters**

<table>
<thead>
<tr>
<th>600</th>
<th>100</th>
<th>150</th>
<th>190</th>
</tr>
</thead>
<tbody>
<tr>
<td>758 X 357</td>
<td>382 X 480</td>
<td>382 X 550</td>
<td>382 X 550</td>
</tr>
<tr>
<td>1000</td>
<td>1500</td>
<td>1900</td>
<td>1900</td>
</tr>
<tr>
<td>1360</td>
<td>1560</td>
<td>1600</td>
<td>1600</td>
</tr>
<tr>
<td>1950</td>
<td>2160</td>
<td>2650</td>
<td>2650</td>
</tr>
</tbody>
</table>

**Select the Best Option**

**Fan Performance**

- Belt Driven DIDW Centrifugal Forward Curved Fan
- Belt Driven DIDW Centrifugal Backward Curved Fan

**Design your ‘in’vironment with the**

**FLEXAIR™**

**Selection Software**

The selection program is one of the most user-friendly programmes. It allows you to check out various options and helps to make your decision for the right model easier. Selection becomes easy, quick, accurate and generates GA diagrams and all technical data at click of a finger.
**Combinations**

The FlexAir AEM consist of a number of complete functional sections and 15 modules in standard lengths. The modules can be fitted with the air handling functions selected, with your dimension restrictions for on-site transport as limit factors. Concise details of the complete functional sections, air handling functions and basic data for determining the overall length of unit are specified on the pages that follow.

### Installation Alternatives

<table>
<thead>
<tr>
<th>Standard module</th>
<th>Length (mm)</th>
<th>Standard module</th>
<th>Length (mm)</th>
<th>Standard module</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>330</td>
<td>15</td>
<td>480</td>
<td>20</td>
<td>630</td>
</tr>
<tr>
<td>15</td>
<td>480</td>
<td>20</td>
<td>630</td>
<td>25</td>
<td>780</td>
</tr>
<tr>
<td>20</td>
<td>630</td>
<td>25</td>
<td>780</td>
<td>30</td>
<td>930</td>
</tr>
</tbody>
</table>

- **Installation Alternatives**: Installation alternatives are shown for specific modules with varying lengths.
- **Complete Functional Section - 2 Storeys**: Includes detailed dimensions for each component.
- **Complete Functional Section - 1 Storey**: Provides specifications for single-story installations.
- **Functional Components**: Lists various components with sizes and module details.

### Functional Components

- **MIE-KS Damper function**: Designed for dust tightness class 3 in accordance with Swedish Standard VVS-SA 98 (type 4 to VVS-SA 89) made of extruded, anodized aluminium sections, with nylon-reinforced ABS plastic gear wheel drive, well protected by side panels.
- **MIE-ID Air intake function**: Connection gable, damper and filter.
- **MIE-FB Filter function**: For deep-pocketed bag filter, equipped with filter slide rails and eccentric clamping device for maximum tightness. Standard size: filter bags for unit sizes: 150-600.
- **MIE-CL Air heater/cooler function (water, DX and steam)**: The coils consist of copper tubes and aluminium fins. ELEC Air heater for hot water, ELCX Air cooler for chilled water.
- **MIE-KL Silencer function**: Withdrawable sound baffle elements consisting of mineral wool covered with cleanable woven fabric (Cleantech).
- **MIE-MD Media installation components**: Includes media installation components and specified modules.
- **MIE-ID Media installation components**: Detailed specifications for media installation components.
- **MIE-CL Media installation components**: Components for air handlers and control cubicles.
- **MIE-MK Inspection door, MIE-TD Empty section panel**: Shielded space for the installation of electrical and control cubicles. Equipped with an inspection door hung on hinges.
- **MIE-MD Media installation components**: Components for media installation.
- **EBA Mixing section**: A functional section for deflecting the air flow 90° upward or downward. Can be fitted with a filter.
- **EBD Media section**: Complete two storey functional section with shielded space for electrical and control cubicle installation.

### Complete Functional Section - 1 Storey

- **EBA Mixing section**: Complete functional section containing two interconnected dampers for mixing outdoor air and exhaust air, for example.
- **EBD Mixing section**: Complete functional section containing three dampers, two outgoing shafts, for mixing outdoor air, exhaust air and recirculated air, for example.

### Complete Functional Section - 2 Storeys

- **EBA Mixing section**: Complete two storey functional section containing three dampers and two outgoing shafts, for mixing outdoor air, exhaust air and recirculated air.
- **EBC Mixing section**: Complete two storey functional section with shielded space for electrical and control cubicle installation.

### Dimensions

<table>
<thead>
<tr>
<th>Size</th>
<th>Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>060-600</td>
<td>10 15 20</td>
</tr>
<tr>
<td>060-600</td>
<td>05-80</td>
</tr>
<tr>
<td>060-600</td>
<td>30 40 50 60</td>
</tr>
<tr>
<td>060-600</td>
<td>380</td>
</tr>
</tbody>
</table>

- **Overall length**: Detailed specifications for overall module lengths.
- **Maximum number of modules**: Specifications for maximum number of modules supplied.
- **Connection gable, damper and filter**:
- **Degree of humidification**: 85% or 95%.
- **Heat Wheels**: Use custom made metallic honey comb matrix coated with Ecosorb Molecular Sieve de-occident.
- **Vary as required**: Dimensions for varying requirements.
- **Vary depending on the degree of attenuation desired**: Specifications for varying degrees of attenuation.
- **Vary depending on the output variant**: Specifications for output variants.
Our products are manufactured to meet international standards and are shipped regularly to the Americas, Europe, Japan, Korea, Australia, China, South Africa, West Asia, Indian subcontinent, South East Asia, Russia and the CIS Countries.

Never too far from you!

Indian Offices

Gurgaon : 100-101, Udyog Vihar, Phase-IV, Gurgaon 122015, INDIA
Tel.: +91-124-24931020, Fax: +91-124-24935155, E-Mail: drimarketing@pahwa.com

Mumbai : 319, T.V. Tower, Industrial Estate, Worli, Mumbai 400025, INDIA
Tel.: +91-22-24931020, Fax: +91-22-24931020, E-Mail: mumbai@pahwa.com

Kokata : Shrivam Chambers, 53-Syed Amri Ali Avenue, Kolkata 700 019, INDIA
Phone: 033-22314841, 22314777, 22314701, Fax: +91-33-22314859, E-Mail: drkkolkata@pahwa.com

Chennai : New # 5 (old # 20), 2nd Street, E-Block, Anna Nagar-East, Chennai-600102, INDIA
Tel.: +91-44-42026406, E-Mail: drichennai@pahwa.com

Kolkata : Shivam Chambers, 53-Syed Amri Ali Avenue, Kolkata 700 019, INDIA
Phone: 033-22314841, 22314777, 22314701, Fax: +91-33-22314859, E-Mail: drikkolkata@pahwa.com

International Offices

Malaysia
Phone: +60-3-77259919
Fax: +60-3-77259957
E-Mail: bam@bryair.com.my
Website: www.bryair.com.my

China
Phone: +86-21-51919955
Fax: +86-21-51919959
E-Mail: byair@byair.com.cn
Website: www.byair.com.cn

Philippines
Phone: +632-8074135-37
Fax: +63-2-8074435
E-Mail: phil@byair.com.ph
Website: www.byair.com/philippines

Korea
Phone: +82-11-86350851
Fax: +82-11-86350851
E-Mail: drimarketing@pahwa.com
Website: www.drikorea.co.kr

Brazil
Phone: +55-41-9841-3542
Fax: +55-41-9841-3542
E-Mail: drikorea@hanmail.net
Website: www.drirotors.com

South Africa
Phone: +27-31-2027829
Fax: +27-31-2027829
E-Mail: drimarketing@pahwa.com
Website: www.drirotors.com

UAE
Phone: +971-6-5578149
Fax: +971-6-5578149
E-Mail: mgclark@driamerica.com
Website: www.driamerica.com

USA
Phone: +1-703-890 9465
Fax: +1-703-890 9465
E-Mail: sales@byair.com.my
Website: www.byair.com/my/usa

India
Phone: +91-124-24931020
Fax: +91-124-24931020
E-Mail: mumbai@pahwa.com
Website: www.byair.com/my/india

Vietnam
Phone: +84-8-39564981
Fax: +84-8-39564979
E-Mail: vietnam@byair.com.my
Website: www.byair.com/my/vietnam

Our products are manufactured to meet international standards and are shipped regularly to the Americas, Europe, Japan, Korea, Australia, China, South Africa, West Asia, Indian subcontinent, South East Asia, Russia and the CIS Countries.

Never too far from you!