



Bi-Polar Ionization

*A Powerful Air Purification Solution
for the Commercial Sector*

FALL 2008

Breathing is Believing.SM





Purification Solutions

- ✓ Central to a comprehensive indoor environmental solution
 - ✓ Support qualification for LEED points.
 - ✓ Provide energy savings while improving air quality
- ✓ Support highly innovative, responsible value-engineering for greener, more sustainable buildings



Air Quality in the News

The New York Times

Dirtiest air found in New York, California

LOS ANGELES (AP) — New Yorkers and Californians breathe the dirtiest air in the nation and face higher cancer risks, according to the latest data from the U.S. Environmental Protection Agency.

Washington, D.C., has the fourth worst air.

New Yorkers' risk of developing cancer from air toxins is estimated to be 68 residents per million. In California, the risk is 66 residents per million.

The national average is 41.5 per million, according to the report, which was released in February and based on emissions of 177 chemicals in 1999, the most recent data available.

Rural residents of Wyoming, South Dakota and Montana breathed the cleanest air.

The EPA assessment evaluated toxins including heavy metals, such as lead; volatile chemicals, such as benzene; combustion byproducts, such as acrolein; and solvents, including perchloroethylene and methylene chloride.



Asthma: A threat to your child's education?

11:08 AM CDT on Saturday, October 20, 2007

By Dave Fehling / 11 News

Watch Dave Fehling's report
Two local schools have been at the center of controversy regarding indoor air pollution. Some say it is making children and teachers sick. But there may be much more to the story, specifically about asthma. And it is developing into a serious threat to getting a good education.



LA May Reclaim Title Of Smog Capital Of America

The Los Angeles area is probably going to reclaim its dubious title as the smog capital of America.

Although air quality has been relatively good so far this summer, the Southland has had 76 "smoggy days" under the nation's new and stronger ozone standards, compared to only 41 bad-air days in Houston and 61 in the San Joaquin Valley, the *Daily News* newspaper reported.

"Every day with bad air, we're concerned about asthma attacks, premature deaths, school absences and lung damage to children."

In recent years, the Southland, Houston and the San Joaquin Valley have had the worst air in the country, and last year, Houston earned the smog title with 22 bad air days.

Breathing is BelievingSM





Central to a Comprehensive **Indoor Environmental Solution**

- Supply side air quality management
- Reduces air-borne particulates
- Destroys mold spores and most bacteria
- Eradicates VOCs and odors
- Low energy-use solution
- Eliminates static electricity
- Perceptively improves air quality, naturally

Recent US Reference Clients

Hyatt Hotel, 75 Wall Street, New York, NY

- *Partnership with IEC (International Environmental Corp)*
 - FC100 Single-tube Ionization Solution
 - Integrated with IEC Fan Coil in-room unit
 - Fully UL Approved Integrated Unit

UBS North America HQs, Stamford CT

- 5-tube & Single-tube Solutions
- Integrated in Roof top mechanicals for Childcare & Fitness Center
- Around Main Trading Floors, around Restrooms & Food Centers

Minskoff Properties, 101 Warren Street, New York, NY

- High-End Condominiums Integrated Upgrade
- FC100 Unit Integrated into Apartment Fan Coil Units
- 500E/F systems also installed into lobby and common area air systems

Captures LEED Points

Innovation in Design

- *ID Credit 1*

- Can help obtain a credit in this category through “Exemplary Performance”
- As evidenced by our Independent Laboratory testing performed by Intertek ETL Semko, *AtmosAir*’s technology provides a superior CADR rating of 125 (MERV 13) without any restriction or redesign of airflow or additional amounts of outside air required. This performance will enhance the interior environment without the cost of using additional energy

Indoor Air Environmental Quality

- *EQ Credit 3.2 (aka “Flush-out”)*

- 1 potential point: a LEED project could earn a credit for testing for VOCs prior to occupancy using *AtmosAir* systems for air & VOCs purification, in lieu of a costly delay of occupancy via extended 100% fresh air flush-out.

Technology Recap

Technology with a distinguished history

- Albert Einstein's sister contracted TB and in keeping with medicine at the time, went to a hospital in the Swiss Alps where doctors said the healing rate was higher. She recovered.
- Einstein's Theory of Light Absorption proved the presence of a higher conductivity in air.
- He surmised that a higher degree of conductivity (ionization) was related somehow to a healthier climate.
- Einstein and his partner Conrad Habicht invented a technology that could produce a higher ion count indoors – the basis for *AtmosAir*'s technology.

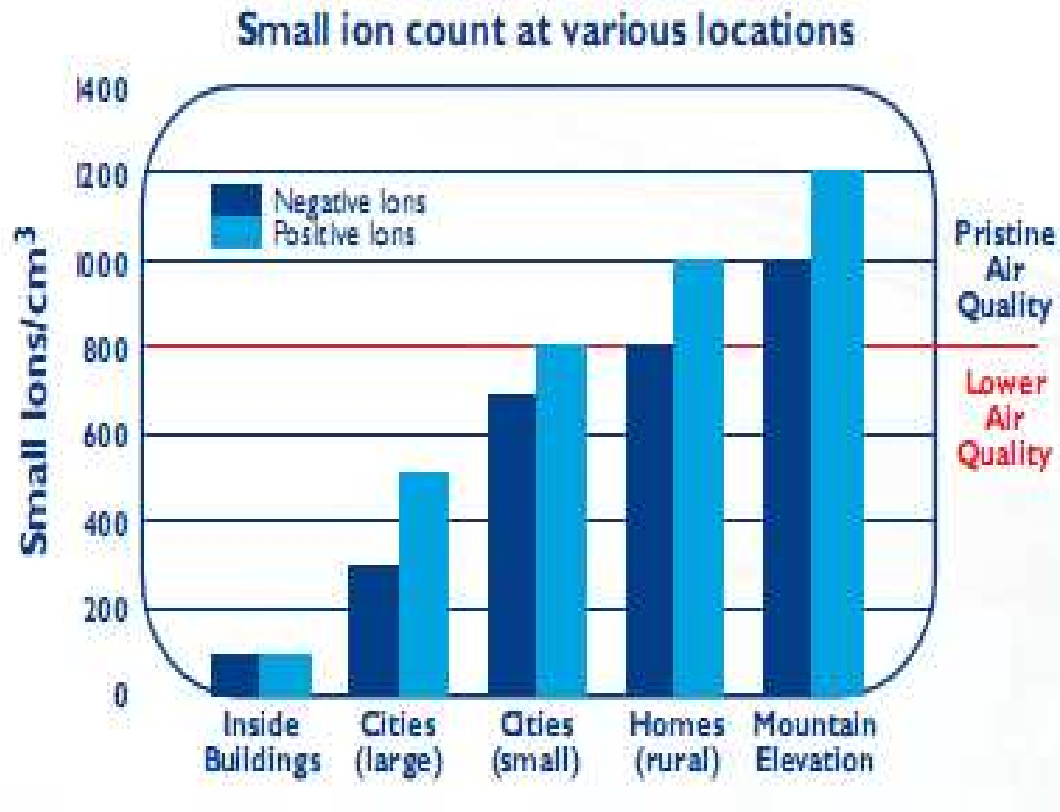
"The Olympic Academy"



Conrad Habicht Maurice Slovine Albert Einstein

Ion Count and Air Quality

Increasing ion levels is Nature's way of improving air quality



AtmosAir's goal is to restore the air inside a building to the quality found at mountain elevations, where high ion levels occur naturally

How Bi-Polar Ionization Technology Works



*Other Products Only Clean The Air That Goes Through Them.
AtmosAir Cleans The Air In The Space Where You Breathe.*

Air carries oxygen molecules over AtmosAir's system

Oxygen Molecules are converted into Positively and Negatively charged Ions (Activated Oxygen)

Activated Oxygen clusters are attracted to and bond with oppositely charged airborne pollutants. These particles fall out of the breathing range and drop to the floor, restoring the air to a clean, breathable quality

Bi-Polar Ionization Beneficial Effects

Particle Reduction

- Particles are neutralized and fall out of the breathing range

Odors Control

- Unpleasant organic odors (trash, mildew, cooking, dirty laundry, fresh paint or varnish) are instantly eliminated

VOC (Volatile Organic Compound) Control

- Complex hydrocarbon chains are broken down into simpler harmless elements

Mold, Bacteria, Viruses, Germs, etc. (Microbials)

- Reproductive cycle is interrupted and colony forming units decrease

Energy Conservation

- Industrial applications: ionization provides a cost effective solution to control exhaust emissions.
- Commercial applications: less introduction of outside air is needed to provide comfort and air quality, lowering heating and cooling costs.

Static Electricity Reduction

- Bi-Polar Ionization neutralizes all charges in the air and eliminates static electricity

All Natural Process

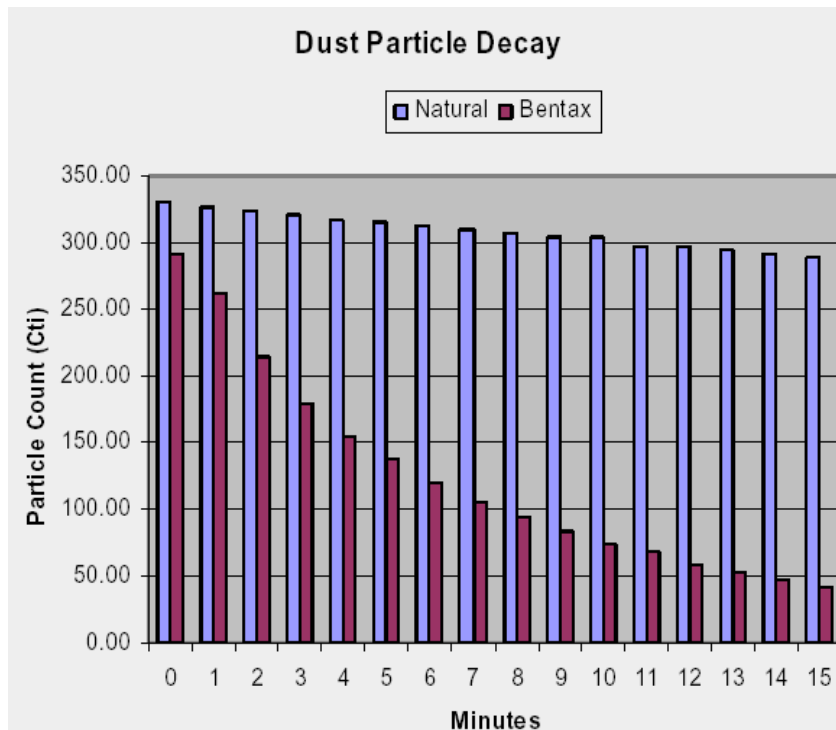
- No chemicals or harmful by-products

Laboratory Testing

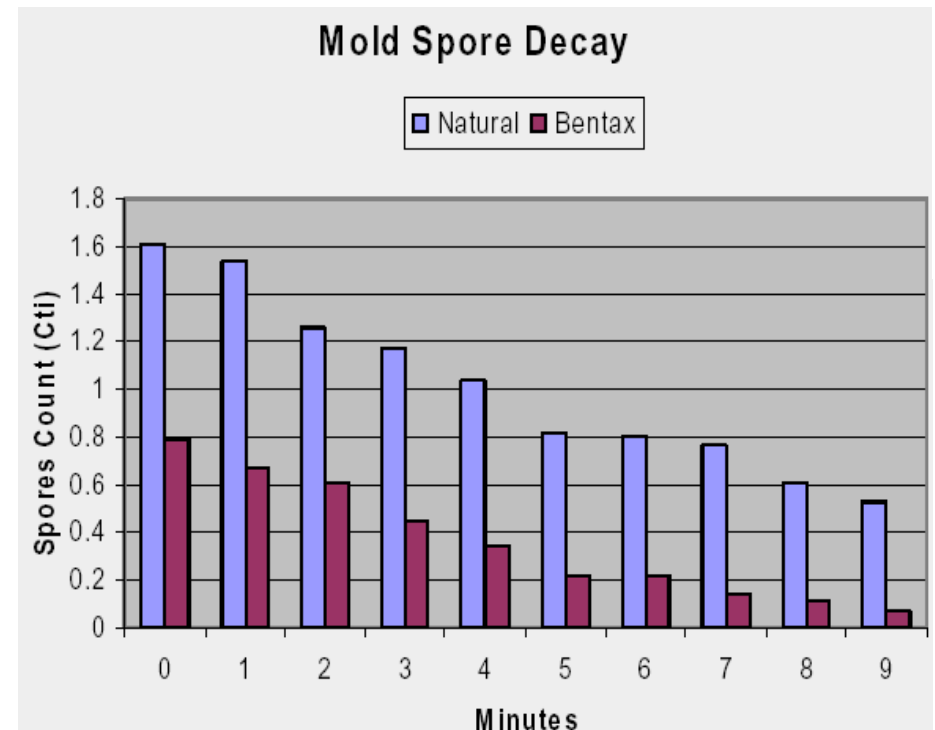
Effectiveness on Dust, Mold Spores



REPORT
INTERTEK, ETL SEMKO
3933 US ROUTE 11 CORTLAND, NEW YORK 13045



Natural 12.8% Bi-Polar Ionization 85.8%

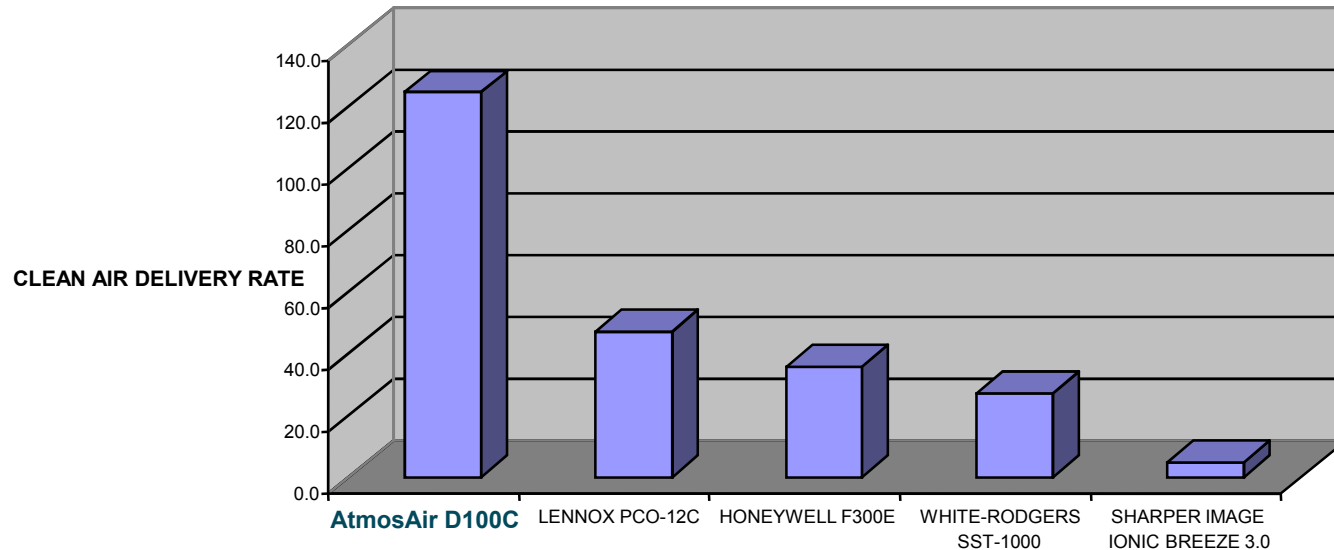


Natural 67.1% Bi-Polar Ionization 91.1%

Clean Air Delivery Rate (CADR)

Comparison of Popular Devices

AIR CLEANER TEST RESULTS (CADR)



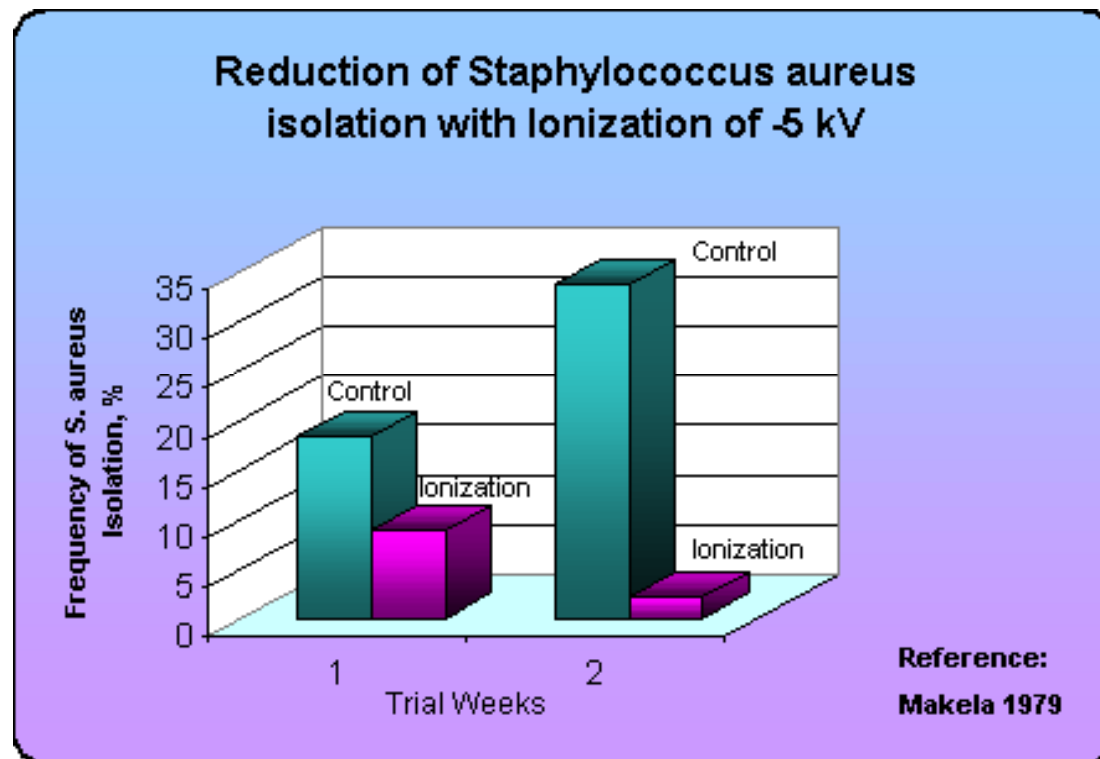
<u>Product</u>	<u>CADR Rating</u>	<u>Variance from Bi-Polar</u>
ATMOSAIR D100	125	N/A
Lennox Healthy Climate PCO-12C	47.4	264%
Honeywell Enviro-Care F300E	35.8	349%
White-Rodgers SST 1000	27.2	460%
Sharper Image Ionic Breeze 3.0	4.8	2604%

Bi-Polar Ionization Delivers More Value Than Other Air Purification Solutions

	HEPA Air Filters	Ultra Violet Light	Needle Point Ionization	Electrostatic Precipitators	AtmosAir Bi-Polar Ionization
Portable and In-Duct systems	X	X	X	X	X
Whole building air purification					X
Does not restrict HVAC airflow		X	X	X	X
Low energy solution	X				X
Produces positive and negative ions					X
Highly effective on mold, smoke..			X	X	X
Highly effective on VOCs					X
Does not produce ozone	X	X			X
Effective on particles	X		X	X	X
Can treat contamination source					X
No interference with TV or radio	X	X			X

Ions' Effectiveness on Airborne Bacteria

Field Analysis

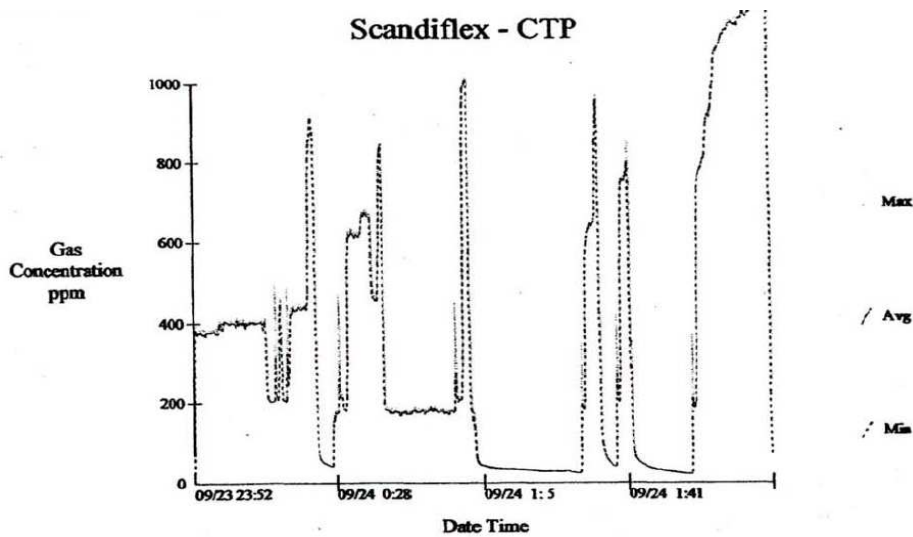


Study: Penn State Dept. of Architectural Engineering. Results show *Staphylococcus Aureus* levels in patient rooms. Study shows a definite reduction in airborne levels with ionization.

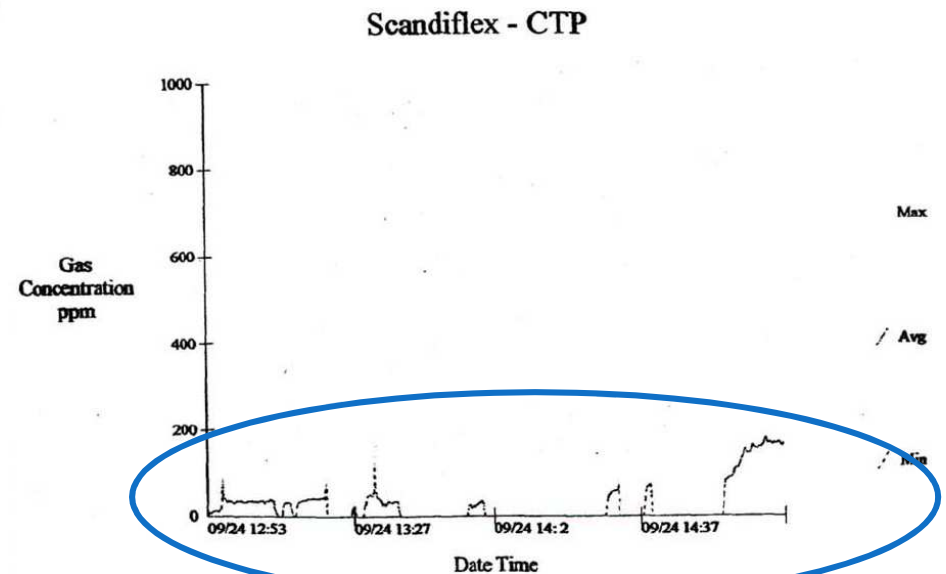
Study performed by Makela, P., Ojajarvi, et al. "Studies on the effects of ionization on bacterial aerosols in a burns and plastic surgery unit".

VOC Reduction: Sample Project

Ions' Effectiveness on Ethanol Gas Emissions



The analysis performed by CTP Air Pollution Control in its Report of Bi-Polar Ionization VOC Reduction System at Scandiflex/Lanskino Rittsteig, K.



Energy Savings Case Study

Florida Power & Light Building Plantation FL

Subject: Florida Power & Light Building 7201 Cypress Rd. Plantation, FL

Case: Projected HVAC cost savings with installation of AtmosAir system and decreased outside air introduction

Case Building	<u>7201 Cypress Rd. Plantation FL</u>
Approx. Size	<u>25,000 square feet</u>
Outside Air Reduction	<u>Approx.. 10 cfm.</u>
Approx. HVAC cost savings	<u>\$0.28 per square foot*</u>
Yearly HVAC cost savings	<u>\$7,000.00 per year</u>
Initial Investment AA system	<u>\$15,000.00 .60 per square foot</u>
AA Maintenance Cost	<u>\$2,925 per year .11 per square foot</u>
Investment Payback Period Equipment Only	<u>2.2 years</u>
Investment Payback Period Maintenance Included	<u>2.9 years</u>
Net Cost Savings After Investment Payback With Maintenance Included	<u>\$4,075 per year / \$0.17 per square foot</u>

Energy Use Comparison

AtmosAir Systems vs. MERV 13 (86%) Filters

Comparison Yearly Energy Cost for an Air Filter vs. AtmosAir Units

The figures below are based on a 12" pleated 24"x24" 80 to 85% efficient filter (MERV 13)

Energy cost is calculated based on the national commercial average of .1105 Kwh

The cost calculations are based on 8760 hours of use (1 year continuous) and US avg. commercial electric cost .1105 KWH

Filter Energy Cost

@ 1000 cfm = \$122.54

@ 2000 cfm = \$245.08

@ 4000 cfm = 490.16

@ 6000 cfm = \$735.24

@ 8000 cfm = \$980.32

@ 10,000 cfm = \$1,225.40

AtmosAir Energy Cost

@ 1000 cfm = \$6.59 (1) D100 Electrical Consumption .005 KW

@2000 cfm = \$8.34 (1) D100 Electrical Consumption .005 KW

@4000 cfm = \$16.68 (2) D100 Electrical Consumption .010 KW

@6000 cfm = \$54.05 (1) 500E Electrical Consumption .045 KW

@8000 cfm = \$57.55 (1) 500E Electrical Consumption .045 KW

@10000 cfm = \$65.90 (1) 500F Electrical Consumption .050 KW

Beneficial Effects of IAQ Management

➤ Productivity and Decreased Absenteeism Studies

● Harvard School of Public Health

- Moderately ventilated facilities = 56% more absenteeism
- Increased ventilation or more effective IAQ management = prevention of 35% of those absences
- Cost of absenteeism = \$480/worker

➤ Quick Return on Investment

● Pennsylvania Power & Light

- Upgrades IAQ
- Productivity gains = 13.2%
- Absenteeism decrease = 25%
- Reduced energy costs = 69%
- Investment paid back in 69 days

➤ Productivity Gains

● Carnegie Mellon University Research

- A 1% gain in productivity by occupants in an average office building will pay the buildings energy costs for one year.
- A 5% gain in productivity by occupants in an average office building will pay the buildings mortgage/lease for one year.

AtmosAir Group Inc.

Product Line

- In-Duct (existing/retro-fit)
- Portables
- Replacement Tubes

In-Duct

Residential & Small Business

“AtmosAir D100”

- Available with a C, D or E tube
- For use in residential and light commercial applications—up to 3,000 cfm*
- Also available in “*AtmosAir FC100*” integrated “fan-coil” version
- UL Listed

cfm = cubic feet of air per minute

* coverage will vary with contaminant level



In Duct

Commercial/Industrial

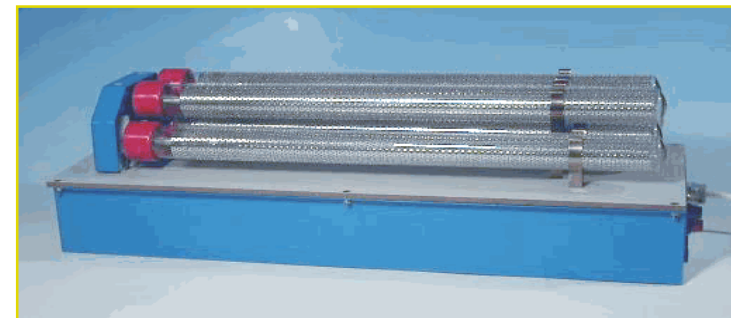
"AtmosAir 500E"

- Equipped with five 'E' tubes
- Commercial applications up to 7,000 cfm*
- UL Listed



"AtmosAir 500F"

- Equipped with five 'F' tubes
- Commercial applications up to 10,000 cfm*
- UL Listed
- cfm capacities will vary with contaminant level



Portables

AtmosAir Mini Tower

T400

- 16" Height
- Areas up to 500 ft² including bedrooms, kitchens, living rooms, and offices



Portables

AtmosAir P2000 (1 tube)

- Areas up to 1500 ft²
- E.g. classrooms, conference rooms, restaurants, trash rooms, beauty salons, basements, demonstration units and many areas where central HVAC systems are not present.

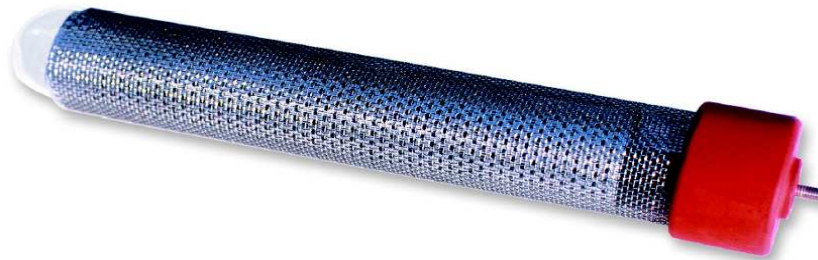
AtmosAir P2002 (2 tubes)

- For more severe & concentrated problems
- Smoke/mold rapid remediation solution



Replacement Tubes

- *AtmosAir* Tubes must be replaced annually -- the only maintenance required in most applications*



*Periodic tube cleaning advised In certain high-VOC environments

AtmosAir™ Advantages

Low Energy Use Solution

- *AtmosAir*™ Bi-Polar ionization provides a tested contaminant removal efficiency of 86% (MERV 13). The units only consume .0045 watts of power per cfm of coverage capacity. The maximum static pressure drop is .002 inches WG at 10,000 cfm. An excellent filtering strategy in a green design.

Low Maintenance

- In most applications only a once yearly tube change is required. No components to clean or filters to change on a regular basis. The system is not affected by continual usage.

Wide Range of Applications

- Integration of the system will not require mechanical up sizing or re-design due to airflow restriction. Bi-Polar ionization has tested effectiveness on particle decay, VOC decay and mold and bacteria decay.

Bi-Polar Ionization Reference Projects

US & Worldwide

Hospitality & Food Processing

- Hyatt Hotel, New York, NY
- McDonalds throughout Europe
- Nestle Foods throughout Sweden
- Hilton Hotels—New York, NY

Schools

- Darien BOE—Darien, CT
- Fairfield University—Fairfield, CT
- Tustin High School—Tustin, CA
- Univ. of Bridgeport—Bridgeport, CT

Offices

- UBS Childcare Center & Trading Floor—Stamford, CT
- Thomson Corp—Stamford, CT
- Florida Power & Light (HQs)— Ft Lauderdale, FL
- Washington Gas Light, Washington, DC
- Financial Times Building—London, UK
- Siemens AG—Vienna, Austria, New Jersey
- Rolex—Geneva, Switzerland

Hospitals

- Norwalk Hospital—Norwalk, CT
- VA Hospital—West Haven, CT
- South Oaks Hospital – Amityville, NY
- Coral Springs Med. Ctr.—Coral Springs, FL

Sports Applications

- Dallas Cowboys Training Center
- American Airlines Arena Dallas Mavericks
- San Jose Sharks
- Alltel Stadium
- Florida Marlins
- Swedish National Hockey Team locker rooms and personal inhalers

Airports

- Sturup Airport— Malmö, Sweden
- Frankfurt Airport— Germany

Manufacturing

- Combex—Robstown, Texas
- Bridgeport Insulated Wire—Stratford, CT
- Scandiflex—Sweden

Wastewater/Sewage

- City of Norwalk—Norwalk, CT
- City of Three Rivers—Michigan
- City of Lexington—Kentucky

Miscellaneous

- US Army
- Walter Reed Army Medical Center

Clean Air Group Inc.

Professional Affiliations:

- ✓ AtmosAir products are **Energy Star certified**.
- ✓ Clean Air Group/AtmosAir is an **Energy Star Partner**.
- ✓ Clean Air Group/AtmosAir is a member of the **U.S. Green Building Council (USGBC)**.
- ✓ Clean Air Group/AtmosAir is a member of the **American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)**.
- ✓ Clean Air Group/AtmosAir is a member of the **Indoor Air Quality Association (IAQA)**.
- ✓ Clean Air Group/AtmosAir is a member of the **Green Energy Council**.



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