HEARTLINE FITNESS

DISINFECT & PROTECT WEBINAR SERIES #4

Presenter: Steve Levine President & CEO

AtmosAir SOLUTIONS

The Air is Better Here.

www.AtmosAir.com

About AtmosAir SOLUTIONS

AtmosAir is committed to improving energy efficiency and indoor air quality in buildings worldwide through its innovative AtmosAir Solutions air treatment and monitoring system.

- Headquartered in Fairfield, CT.
- Started as an air testing company in 2004.
- Branded patented Bi-polar ionization (BPI) air treatment technology as ***AtmosAir*** in 2008
- 80M+ Square Ft Installed.
- 7,500+ buildings with AtmosAir systems.
- Partnered with KeyTronicEMS manufacturing
- Granted 10+ technology patents and 20 pending patents.
- Offices in Tempe, AZ, Dubai, and Shanghai.

AtmosAir Experience

These companies have all incorporated AtmosAir BPI and air monitoring.

Key Markets:

- Commercial Offices
- Healthcare
- Schools
- Hospitality
- Sports
- Airports
- Marine
- Convention Centers
- Grocery Stores
- Government
- Performing Arts

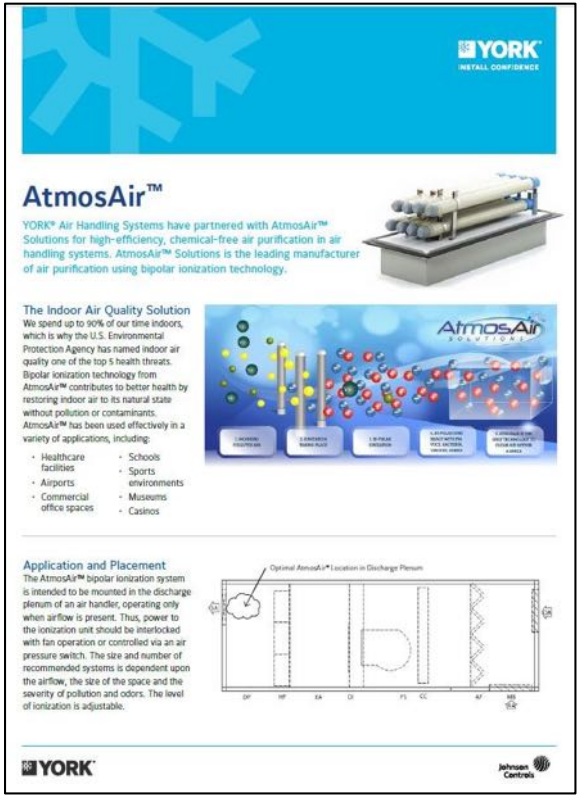
AtmosAir –VENUES Projects

AtmosAir Installations - Venues, Sports, Convention			
Full Stadium/Bowl Air Handlers	Arena/Stadium - Common Areas/Locker Rooms	Training Center	College
Staples Center (Los Angeles, CA)	Golden 1 Center (Sacramento, CA)	San Fransisco 49ers - Levi's Stadium (Santa Clara, CA)	Texas A+M University - Kyle Field
US Bank Stadium (Minneapolis)	Quicken Loans Arena (Cleveland, OH)	Las Vegas Raiders Headquarters (Henderson, NV)	University of Southern California - John McKay Center
Rocket Mortgage FieldHouse (Cleveland, OH)	Levi's Stadium (Santa Clara, CA)	Denver Broncos Training Center	Northwestern Univ. Ryan Fieldhouse
Key Arena (Seattle, WA) - Opening 2021	TD Garden (Boston, MA)	Dallas Cowboys STAR Training Center	Northwestern Univ. Walter Athletics Ctr
	State Farm Arena (Atlanta, GA)	NE Patriots Gillette Stadium Facilities	Universtiy of Southern California - Heritage Hall
	Little Caesars Arena (Detroit, MI)	Atlanta Braves' Facilities (Atlanta, GA)	UCLA John Wooden Center (CA)
	Wells Fargo Center (Philadelphia, PA)	Nashville Predators Facilities	Northwestern Univ. Welsh-Ryan Arena
	Chase Center (San Fransisco, CA)	Detroit Tigers Facilities - Comerica Park	Misc
	SunTrust Park (Atlanta, GA)	Milwaukee Bucks Training Center	Broward County Convention Center
	Bridgestone Arena (Nashville, TN)	Dallas Mavericks Training Center	Soulcycle (30+ locations)
	Pittsburgh Pirates Facilities - PNC Park	Pittsburgh Pirates Facilities - PNC Park	Equinox Fitness
	Fiserv Forum (Milwaukee, WI)	Minnesota Wild Training Center	Rumble Boxing
	Globe Life Field (Dallas, TX) - Opening April 2020	Chicago Cubs Training Facility - Sloan Park	New York Sports Clubs (Multiple)
	Allegiant Stadium (Las Vegas, NV) - Opening Sept 2020	Jacksonville Jaguars Training Center (FL)	NFL, NHL, PGA, NBA Headquarters
	Bridgestone Arena (Nashville, TN)	Kansas City Chiefs Training Center	
	MSG Sphere (Las Vegas) - 2021	New York Giants Quest Diagnostics Training Center	
	SoFi Stadium (Los Angeles) - Opening 2021		

Global Partnership with Johnson Controls

"Bi-polar ionization products from AtmosAir™ strengthen our growing strategy to provide innovative factory-integrated IAQ solutions in the YORK® family of air handling products. AtmosAir is the leading manufacturer of air purification using bi-polar ionization technology."

- Rob Tanner, Director of Marketing for Air Handling Systems, Johnson Controls.



COVID19 AtmosAir Press

NEW YORK POST

LOIS WEISS

REAL ESTATE

Coronavirus has NYC buildings eyeing new cleanliness and security protocols

By Lois Weiss

April 7, 2020 | 9:52pm

Building owners are creating new cleanliness and security protocols amid fears that pandemics could become part of the new normal.

"People are tearing up the old real estate playbook," said Michael Silver, chairman of Vestian, a real estate management company that focuses on tenant clients.

"Who would want to go back to coworking post Virus? People will pay a premium for a safe, clean healthy building," he continued.

It's why demand is soaring for indoor air purification systems such as those produced by AtmosAir, based in Fairfield, Conn.

In the last couple of weeks, the AtmosAir purifying system has been installed at two 1-million-square-foot Manhattan office towers — and the company's phones have been ringing off the hook, AtmosAir Vice President and Chief Technical Officer Tony Abate said.

Abate said they are getting a surge in inquiries for their bipolar ionization system, already used at the NBA's offices, the NYU Langone hospital, the Alvin Ailey dance theater studios and offices, Hyatt's Andaz Wall Street hotel — and even at some SoulCycle locations.

MORE FROM: LOIS WEISS

- Commercial real estate industry coming up with creative spin for rent deals
- WeWork plans to renegotiate leases as coronavirus worsens its woes
- Nearly 16,000 NYC property owners owe the city $555M
- Developer and Trump pal Stanley Chera hospitalized
- Legendary Friars Club to stay dark due to coronavirus

BUSINESS INSIDER

Used in large-scale ventilation systems worldwide, bipolar ionization could be a secret weapon in the war against COVID-19

Bipolar ionization technology

Bipolar ionization technology from AtmosAir is now being installed in the HVAC systems of some airports. This technology neutralizes viruses such as coronavirus and other contaminants in the air and on surfaces.

The AtmosAir systems are up and working in terminals at Los Angeles International Airport, Chicago/O'Hare, New York's LaGuardia, Minneapolis, San Francisco International Airport, Vancouver, Fort Lauderdale, Charlotte, and Anchorage.

"While AtmosAir's bipolar ionization won't completely eliminate coronavirus that can spread from passengers or airline and airport employees coughing, sneezing and or coming in close contacts or touching, it will kill the virus in the air and on surfaces such as ticket counters, restaurant tables or sinks in bathrooms," said Dr. Philip M. Tierno, Professor of Microbiology and Pathology at New York University School of Medicine.

Johnson Controls

Johnson Controls brings air purification technology to the fight against COVID-19 in Australia

Air purification combats airborne and surface-to-person viruses in buildings

AtmosAir™ Solutions

Forbes

How Coronavirus Fear Boxed Out The Cleveland Cavaliers' Virus-Resistant Arena (And Tanked Its Miserable Season)

Keith Flamer Senior Contributor

Lifestyle

Writer, pop culture virtuoso and luxury lunatic

The Cavaliers' Bipolar Ionization (BPI) air purification technology by AtmosAir Solutions helps eliminate any airborne particles and germs that escape standard HVAC ventilation and filtration systems, reducing chance for illness. This pristine air also decreases risk for staph infections and other illnesses that can sideline players by significantly reducing germs, mold, dust, odors, bacteria and the spread of airborne viruses.

"We've touched every aspect our venue as part of the Rocket Mortgage FieldHouse transformation project, including updating the operational facility systems that ensures that the air inside our building is clean and healthy," Cavs executive vice president Antony Bonavita said about the modernized arena.

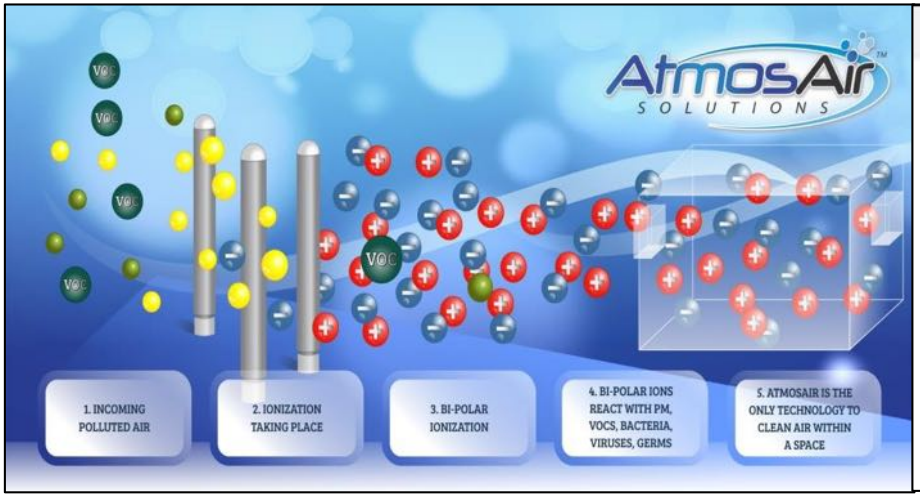
The Cavs aren't alone. The Boston Celtics (TD Garden), Los Angeles Lakers (Staples Center), and Los Angeles Clippers (Staples Center), also deploy Bipolar indoor air purification for players and fans in stadiums, locker rooms and training facilities. So do the Kansas City Chiefs, San Francisco 49ers, New England Patriots, Dallas Cowboys, Minnesota Vikings, Chicago Cubs, Atlanta Braves and Pittsburgh Pirates.

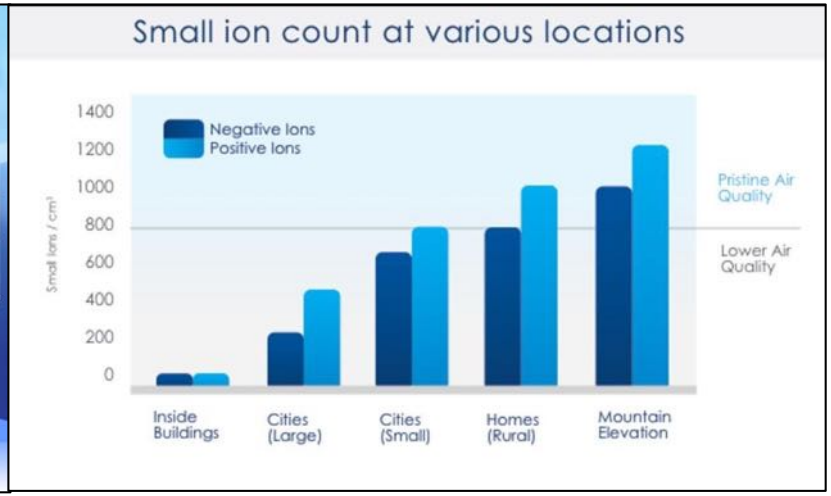
AtmosAir Active Bi Polar Ionization Schedule - Brookfield Place 250 Vesey Street									
Design Parameters				AtmosAir Systems			Electrical		
CODE	SERVICE	SERVING	Supply CFM	AtmosAir Model No.	Unit Qty	Tube Qty	V	HZ	AMPS/unit
BPI-1	AHU-34	JONES DAY	40,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-2	AHU-33	JONES DAY	40,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-3	AHU-32	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-4	AHU-31	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-5	AHU-30	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-6	AHU-29	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-7	AHU-28	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-8	AHU-27	JONES DAY	38,000	508FC	2	16	115	60	0.6
				500FC	1	5	115	60	0.6
BPI-9	AHU-26	MULTI TENANT	29,000	508FC	2	16	115	60	0.6
BPI-10	AHU-25	NOVA SCOTIA BANK	29,000	508FC	2	16	115	60	0.6
BPI-11	AHU-24	NOVA SCOTIA BANK	29,000	508FC	2	16	115	60	0.6
BPI-12	AHU-23	NOVA SCOTIA BANK	29,000	508FC	2	16	115	60	0.6
BPI-13	AHU-22	HBS/SAKS	29,000	508FC	2	16	115	60	0.6
BPI-14	AHU-21	HBS/SAKS	29,000	508FC	2	16	115	60	0.6
BPI-15	AHU-20	HIDTA	29,000	508FC	2	16	115	60	0.6
BPI-16	AHU-19	HIDTA	29,000	508FC	2	16	115	60	0.6
BPI-17	AHU-18	COLLEGE BOARD	29,000	508FC	2	16	115	60	0.6
BPI-18	AHU-17	COLLEGE BOARD	29,000	508FC	2	16	115	60	0.6
BPI-19	AHU-16	COLLEGE BOARD	29,000	508FC	2	16	115	60	0.6
BPI-20	AHU-15	BROOKFIELD	29,000	508FC	2	16	115	60	0.6
BPI-21	AHU-14	BROOKFIELD	29,000	508FC	2	16	115	60	0.6
BPI-22	AHU-12	BROOKFIELD	29,000	508FC	2	16	115	60	0.6
BPI-23	AHU-11	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-24	AHU-10W	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-25	AHU-10E	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-26	AHU-9W	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-27	AHU-9E	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-28	AHU-8W	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-29	AHU-8E	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-30	AHU-7W	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-31	AHU-7E	BANK OF AMERICA	29,000	508FC	2	16	115	60	0.6
BPI-32	AHU-4-1	BROOKFIELD	32,000	508FC	3	24	115	60	0.6
BPI-33	AHU-4-2	OLAPIC	32,000	508FC	3	24	115	60	0.6

AtmosAir 'How It Works' Video by Gensler

https://www.youtube.com/watch?v=A-b7vDnFv6k

AtmosAir Bi-Polar Ionization Air Treatment

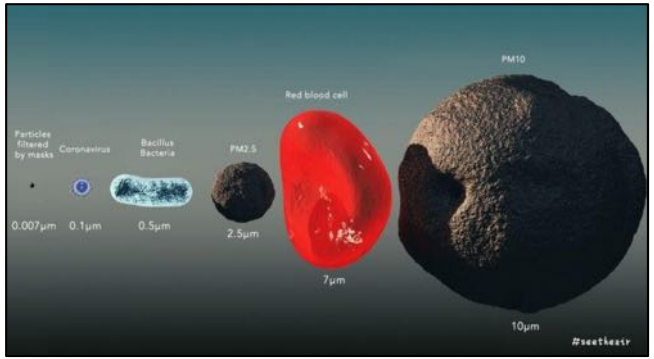


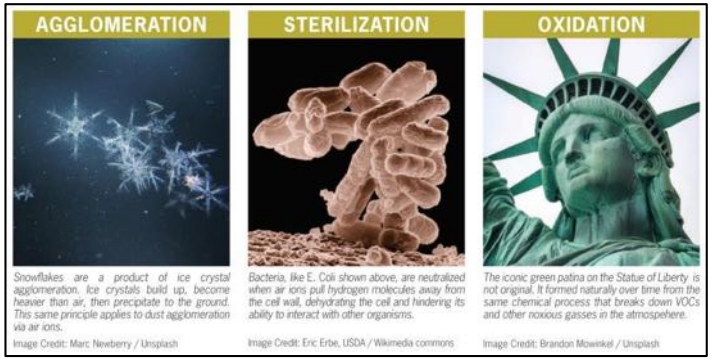


AtmosAir is the only SUPPLY SIDE indoor air treatment solution that continuously measures, monitors and *smartly* disinfects air in the occupied space.

AtmosAir goal is to increase indoor Bi-polar ion concentration by 3-4x ambient (500-1500 ions/cm3) replicating ion rates found in natural environments.

AtmosAir Bi-Polar Ionization Air Cleaning Process





AtmosAir is outlined in Whitepaper 'Nature of Air –Economic and Bio-Inspired Perspective for Indoor Air Quality Management.' (2019, Browning)

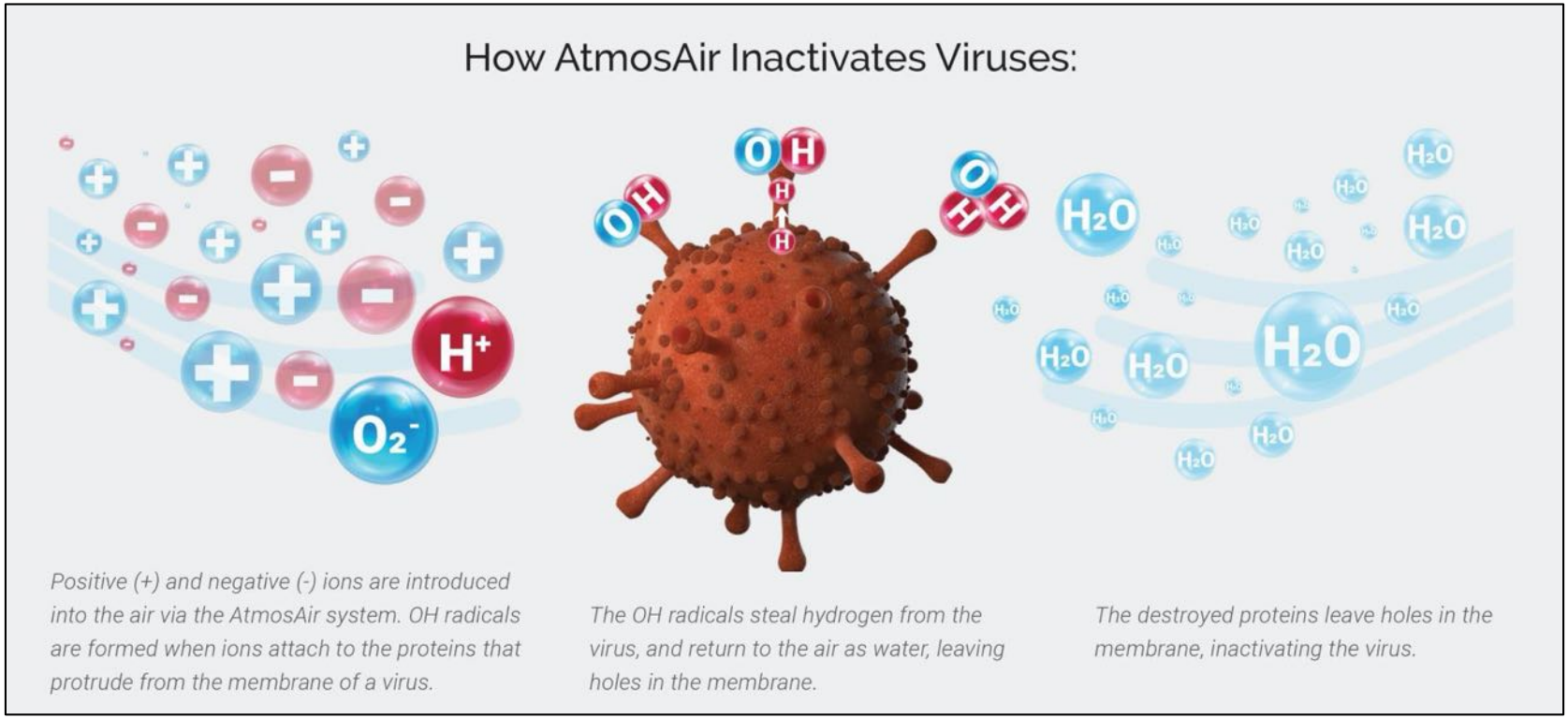
How does AtmosAir™ work against various bacteria, viruses and germs?

Positive and negative ions surround the surface proteins that form on organisms and trigger infections (hemagglutinin), changing them into highly reactive OH groups called hydroxyl radicals. These take a hydrogen molecule from the hemagglutinin and change it into water. The ions destroy the virus surface structure on a molecular level, rendering it incapable of causing infection even if it enters the body.

How does AtmosAir™ reduce particulate matter?
Many small particles that are generated within a space never get to system filters, increasing the chance of illness and respiratory distress. The AtmosAir™ Bi-polar ionization process helps more of these particles be removed from the air we breathe. Oppositely charged AtmosAir™ Bi-polar air ions cause particles to attract to other particles and become bigger and heavier. These larger particles can be trapped by HVAC system filters more easily, so the filters operate more efficiently –and effectively.

How does AtmosAir™ reduce Volatile Organic Compounds (VOCs)?
Bi-polar ions generated by the AtmosAir™ system surround the VOCs and break down hydrocarbon chains, reducing these complex compounds into immeasurable levels of carbon dioxide and water.

AtmosAir "Continuous Disinfection"



AtmosAir is the only SUPPLY SIDE indoor air treatment solution that continuously measures, monitors and *smartly* disinfects viruses and air in the occupied space.

People exhale droplets while sneezing, coughing, and talking.
Micro-droplets carrying viruses can remain airborne in a 'residual cloud'.

AtmosAir Lab Data vs. Viruses

"AtmosAir BPI causes production of clusters of hydroxyl radicals which are formed of the surface of microbes removing hydrogen from the microbes cell wall, thereby killing them. It can reduce 99.% of microbes in a matter of minutes. Ions work in a continuous fashion to disinfect the air."
– Dr. Philip M. Tierno, Jr., NYU

ANTIMICROBIAL TEST LABORATORIES

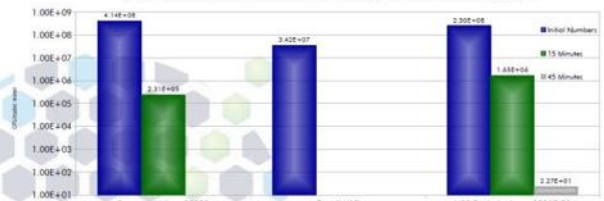
Results of the Study: Test Run

Microorganism	Test Device	Initial Numbers Control (CFU/m³)	Sampling Time Point	Recovery (CFU/m³)		Percent Reduction vs. Normalized Numbers Control	Log Reduction vs. Normalized Numbers Control
				Normalized Numbers Control	Test Data		
S. saprophyticus ATCC 35552	Matterhorn	4.14E+08	15 Minutes	3.39E+07	2.31E+05	99.32%	2.17
			45 Minutes	4.48E+06	<2.27E+01	99.9995%	5.29

Microorganism	Test Device	Initial Numbers Control (CFU/m³)	Sampling Time Point	Recovery (CFU/m³)		Percent Reduction vs. Normalized Numbers Control	Log Reduction vs. Normalized Numbers Control
				Normalized Numbers Control	Test Data		
E. coli K12	Matterhorn	3.42E+07	15 Minutes	1.18E+06	<7.68E+02	>99.94%	3.19
			45 Minutes	1.61E+05	<2.27E+01	>99.986%	>3.85

Microorganism	Test Device	Initial Numbers Control (CFU/m³)	Sampling Time Point	Recovery (CFU/m³)		Percent Reduction vs. Normalized Numbers Control	Log Reduction vs. Normalized Numbers Control
				Normalized Numbers Control	Test Data		
MS2 Bacteriophage ATCC 15597-B1	Matterhorn	2.50E+08	15 Minutes	8.84E+07	1.65E+06	98.13%	1.73
			45 Minutes	3.32E+07	2.27E+01	99.99993%	6.17

Relative Performance of AtmosAir Matterhorn when Tested Against Bioaerosolized Microorganisms



The results of this study apply to the tested substances(s) only. Extrapolation of findings to related materials is the responsibility of the Sponsor.

Results

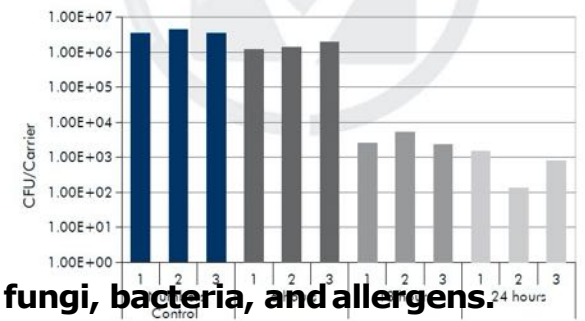
MICROCHEM LABORATORY

Results of the Study

The following graph and table are the calculated results for *C. difficile* 43598 (Endospores) when treated with Matterhorn in a closed chamber measuring 4' x 4'.

Test Device	Test Microorganism	Carrier Control/ Treatment	Replicate or Control Time Point	CFU/Carrier	Average CFU/Carrier	Percent Reduction Compared to Control at Contact Time	Log_{10} Reduction Compared to Control at Contact Time
Matterhorn	*C. difficile* 43598 (Endospores)	Numbers Control	6 hours	3.60E+06	N/A		
			18 hours	4.50E+06			
			24 hours	3.60E+06			
		6 hours	1	1.19E+06	1.53E+06	57.59%	0.37
			2	1.38E+06			
			3	2.01E+06			
		18 hours	1	2.50E+03	3.33E+03	99.93%	3.13
			2	5.20E+03			
			3	2.30E+03			
		24 hours	1	1.51E+03	8.17E+02	99.98%	3.64
			2	1.30E+02			
			3	8.10E+02			

The limit of detection for this assay is 1.00E+01 results below the limit of detection are reported as <1.00E+01.



RESULTS

AtmosAir has lab data and testing vs. various viruses, fungi, bacteria, and allergens.

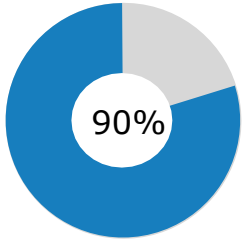
1. https://vimeo.com/354770758
2. AntiMicrobial Test Laboratories (MS2, Staph, MRSA)
3. Microchem (C. Diff)
4. Cleaning Indoor Air Using BiPolar Ionization (Tierno, 2017)

AtmosAir BPI Research & Testing

Systems have been tested and independently verified by multiple labs and institutions.

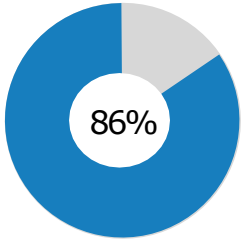
- Reduced VOC's up to 90%
  (University of Syracuse Testing, 2019)
- Reduced >86% of PM0.3 particulate
  (ETL CADR Testing)
- Reduced Staph and MRSA by 99% over 45 minutes.
  (ATL Labs, 2016)
- Reduced MS2 Bacteriophage (Norovirus Surrogate) by >95% over 45 minutes.
  (ATL Labs, 2016)
- Reduced C. difficile by >57% over 6 hrs.
  (Microchem Laboratory, 2017)

Additional lab and real world testing against bacteria, mold spores, Cladosporium, Penicillium/Aspergillus, Coliform Bacteria, Bacillus subtilis, H1N1 influenza virus, Corona Virus, H5N1 avian influenza virus, Airborne Allergens, Ultrafine particles.



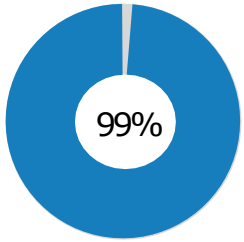
Reduction in
VOC's

Source: Univ. of Syracuse Testing 2019



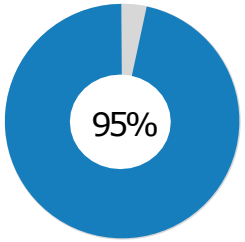
Reduction in
PMO.3

Source: ETL CADR Testing



Reduction in
Staff & MRSA

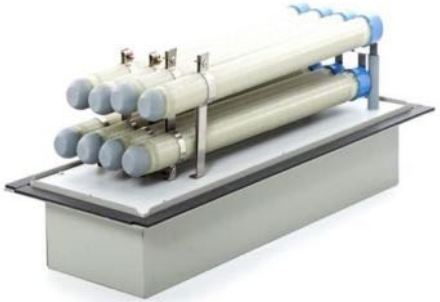
Source: ATL Labs, 2016



Reduction in
MS2 Bacteriophage

Source: ATL Labs, 2016

Commercial In-duct/In-AHU AtmosAir Systems



508FC

500FC

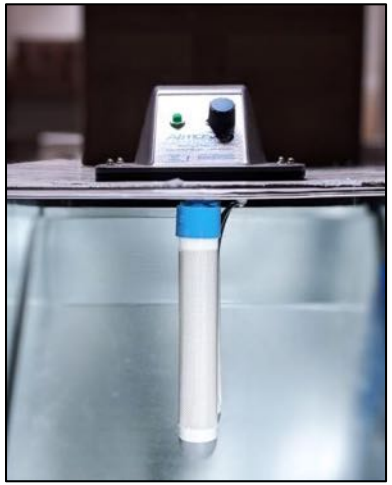
ELECTRICAL

Voltage	110/250 V
Frequency	50/60 hz 1 phase
Power Consumption	49 Watts
Current Draw	240 mA
Internal Fuse	500 mA
Field Electrical Connection	Junction Box

Large Induct Systems		
	508FC	500FC
Number of Tubes	8	5
CFM	16,000	10,000

ALL Products have been tested to UL 867 Ozone Standard (induct products): No measurable ozone

AtmosAir Installation Locations



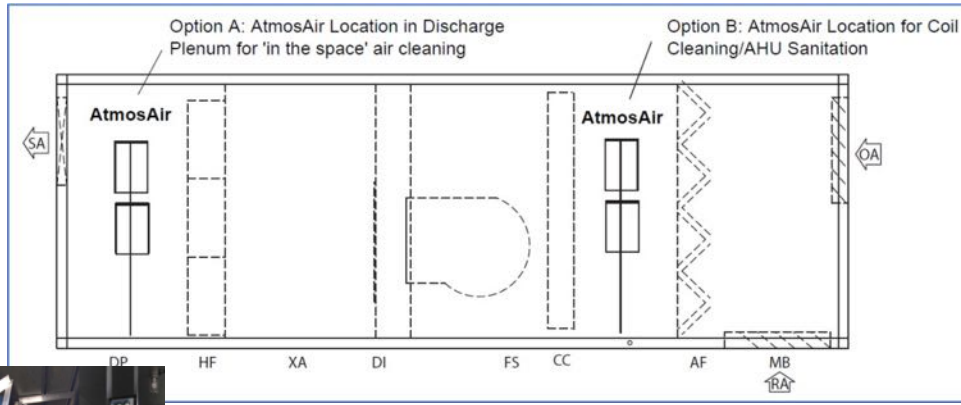
AtmosAir can be easily installed in ANY HVAC air distribution configuration whether it be supply duct mounted or mounted in a supply plenum.

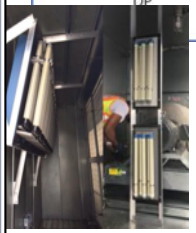
AtmosAir Installation Locations

AtmosAir in Wall Mount Bracket (AHU/RTU)

AtmsoAir BPI System Placement and Design

AtmosAir Active Bi-Polar Ionization Schedule – Minnesota Vikings New Headquarters at Viking Lake									
Design Parameters				AtmosAir Systems			Electrical		
CODE	TAG	SERVING	Supply CFM	AtmosAir Model No.	Unit Qty	Tube Qty	V	HZ	AMPS/ unit
BPI-1	RTU1	Team Equipment	8,000	508FC	1	8	120	60	0.6
BPI-2	RTU2	Home Locker	12,500	508FC	2	16	120	60	0.6
BPI-3	RTU3	Home Training/Weight	12,500	508FC	2	16	120	60	0.6
BPI-4	RTU4	Mezz Level Offices	35,000	508FC	3	24	120	60	0.6
BPI-5	RTU5	Staff, Coach, Cheer Lockers	10,000	508FC	1	8	120	60	0.6
BPI-6	RTU6	Level O2 Offices	34,000	508FC	3	24	120	60	0.6
BPI-7	RTU7	Vikings Network	13,250	508FC	1	8	120	60	0.6
BPI-8	RTU8	Lobby/Auditorium	28,000	508FC	2	16	120	60	0.6
BPI-9	RTU9	Kitchen	10,000	508FC	1	8	120	60	0.6
BPI-10	RTU10	Dining	10,500	508FC	1	8	120	60	0.6
BPI-11	IPF1	Indoor Practice Facility	40,000	508FC	3	24	120	60	0.6
BPI-12	IPF2	Indoor Practice Facility	40,000	508FC	3	24	120	60	0.6
BPI-13	HYU 1-1	Hydrotherapy	4,100	500FC	1	5	120	60	0.6
BPI-14	FCU 1-1	1039D - Hydrotherapy Pit	1,600	FC400	1	1	12	60	0.1
BPI-15	FCU 1-2	1039D - Hydrotherapy Pit	1,600	FC400	1	1	12	60	0.1
BPI-16	FCU 3-1	1034 - Weight Room	2,500	FC400	1	1	12	60	0.1
BPI-17	FCU 3-2	1034 - Weight Room	2,500	FC400	1	1	12	60	0.1
BPI-18	FCU 3-3	1034 - Weight Room	2,500	FC400	1	1	12	60	0.1
BPI-19	FCU 3-4	2058 - Draft Room	1,100	FC400	1	1	12	60	0.1
BPI-20	FCU 3-5	2058 - Draft Room	1,100	FC400	1	1	12	60	0.1
BPI-21	FCU 4-1	C1003 - Corridor	2,000	FC400	1	1	12	60	0.1
BPI-22	FCU 4-2	1003 - Staff Workout - Gym	1,100	FC400	1	1	12	60	0.1
BPI-23	FCU 4-3	T1001 - Satellite Tele/Data	1,600	FC400	1	1	12	60	0.1
BPI-24	FCU 5-1	2010A - Data Center Coaching Video	1,600	FC400	1	1	12	60	0.1
BPI-25	FCU 6-1	1004 - Server Room	2,400	FC400	1	1	12	60	0.1
BPI-26	FCU 6-2	1003 - Main Studio	1,600	FC400	1	1	12	60	0.1
BPI-27	FCU 6-3	1002 - Control Room	1,600	FC400	1	1	12	60	0.1
BPI-28	FCU 6-4	1003 - Main Studio	1,600	FC400	1	1	12	60	0.1





YORKWorks Indoor Air Quality Level Selection Table

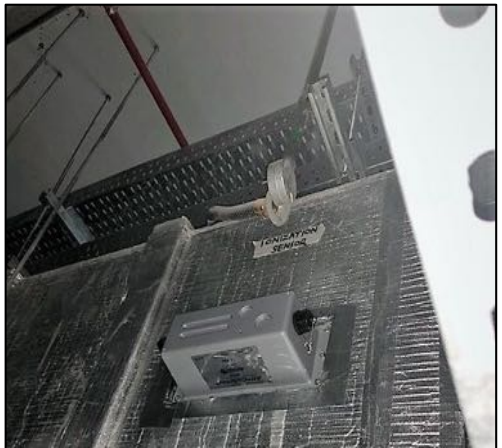
ASHRAE 62.1 Indoor Air Quality Class	AtmosAir™ Indoor Air Quality Level	Building Description
I	A	Residences, Airports, Office Spaces, Schools/ Classrooms, Day Care Centers
II	B	Nursing Homes, Locker Rooms, Manufacturing, Food Processing, Restaurants
III	C	Beauty Salons, Casinos, Waste Water Applications, Industrial Facilities, Garbage Rooms, Kennels
IV	NA	Exhaust to outdoors

Atmos*Smart* In-Duct IAQ Monitoring

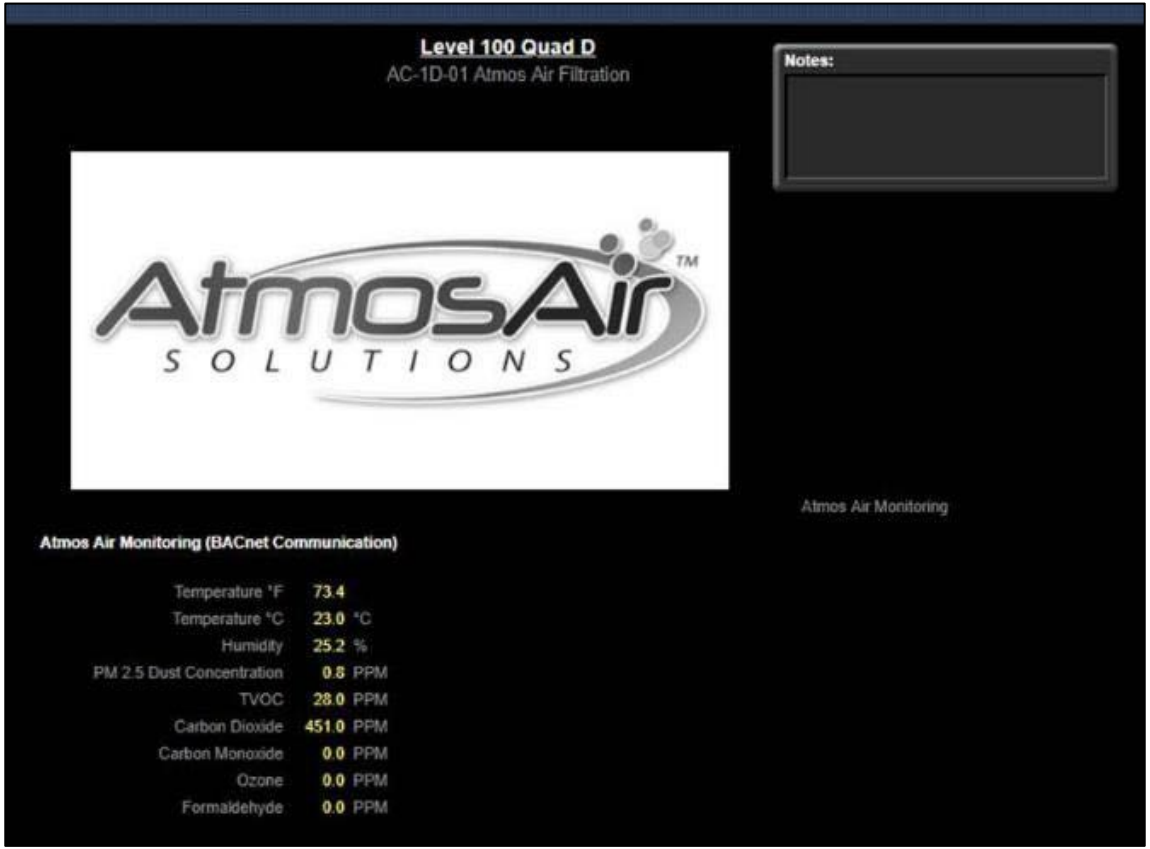
Induct IAQ monitoring simplifies and supports building operations and facility management by measuring and validating IAQ in real time.

- Real-time, accurate monitoring of PM2.5, CO2, TVOC, 03, CO, temperature, and RH.
- BACnet IP Communication
- Continuous data collection.
- DCV Option
- End-to-end encryption for secure data transfer.
- Multiple data export methods over e-mail, micro-SD card, and USB, as well as support for both Ethernet and Wi-Fi

Early In-Duct Adopters: Arizona State University, Seattle Children's Hospital, JLL's NY offices, Los Angeles Airport (LAX), Minneapolis Airport (MSP), JB&B MEP Consulting Engineers, Levi's Stadium - San Francisco 49er's, Las Vegas Raiders, T. Rowe Price (Baltimore HQs and NYC offices), JTC - Government of Singapore, Riyadh Metro Rapid Transit System.



Building Automation System (BAS) IAQ Dashboards



AtmosAware Sensedge In-Room Air Quality Monitoring

24/7 accurate real time IAQ monitoring

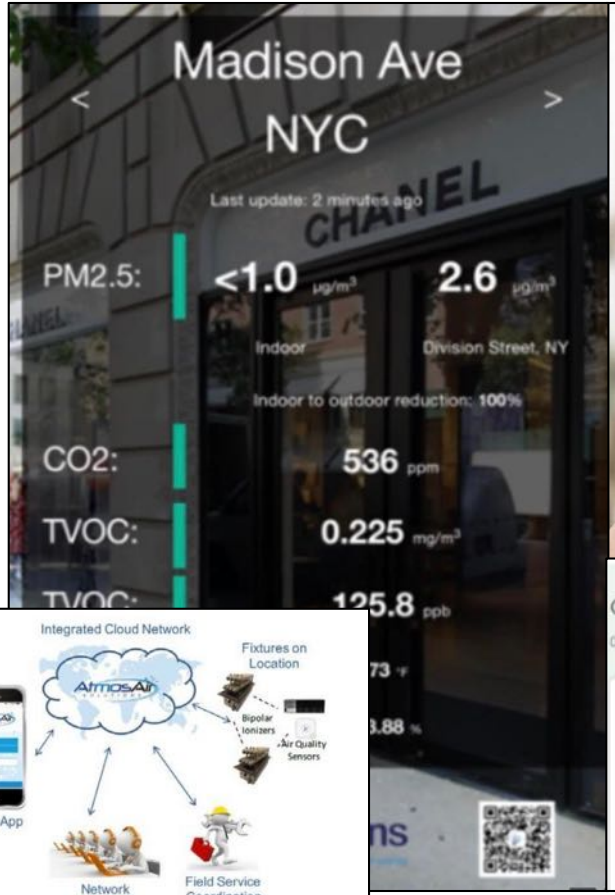
PM2.5 | AQI | TVOC | CO2

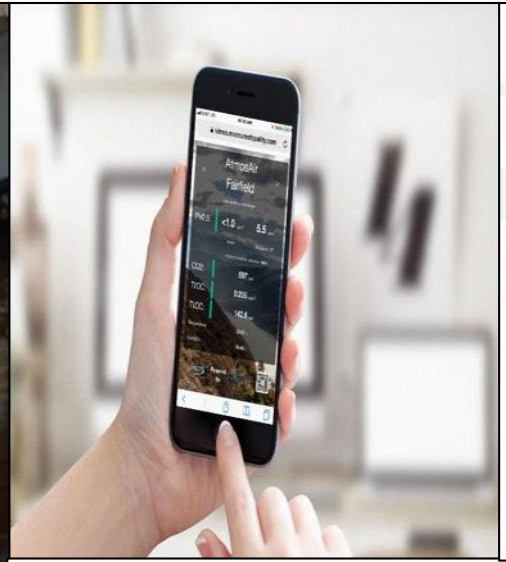
TEMPERATURE | HUMIDITY

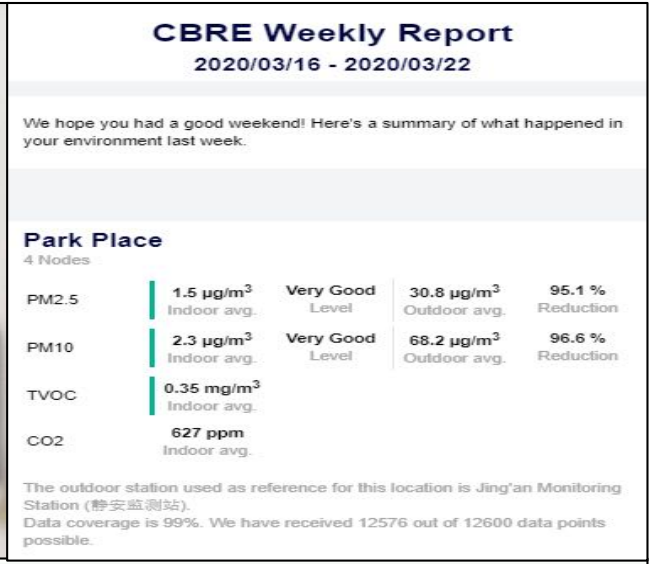
Display

- Local Outdoor Air Quality
- Indoor Air Quality
- Phone App, BACnet, WiFi, Ethernet

Custom Indoor Air Quality Dashboards







Cost Saving/Energy/Sustainability Opportunity

Airside efficiency is typically the largest untapped opportunity for building owners.

AtmosAir is an ASHRAE 62.1 Compliant IAQ Technology

Bi-polar Ionization:

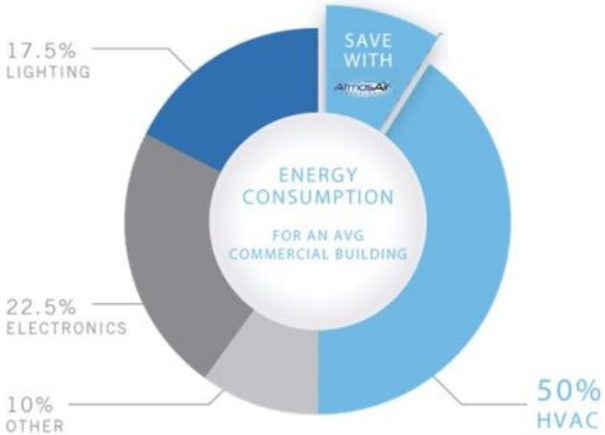
- Can Reduce OA Requirements up to 50% within ASHRAE 62.1/IMC code
- Takes up little space within duct a duct or air handler.
- Has little to no pressure drop.
- Requires negligible power to operate.

Capex Benefits:

- 15% Reduction in Equipment.
- Collateral Cost Savings in Installation, Piping, Electrical, Ductwork
- Potential 20-30% Reduction in HVAC Tonnage/Plant Sizes
- Less of an opportunity to bring in pollution from outside.

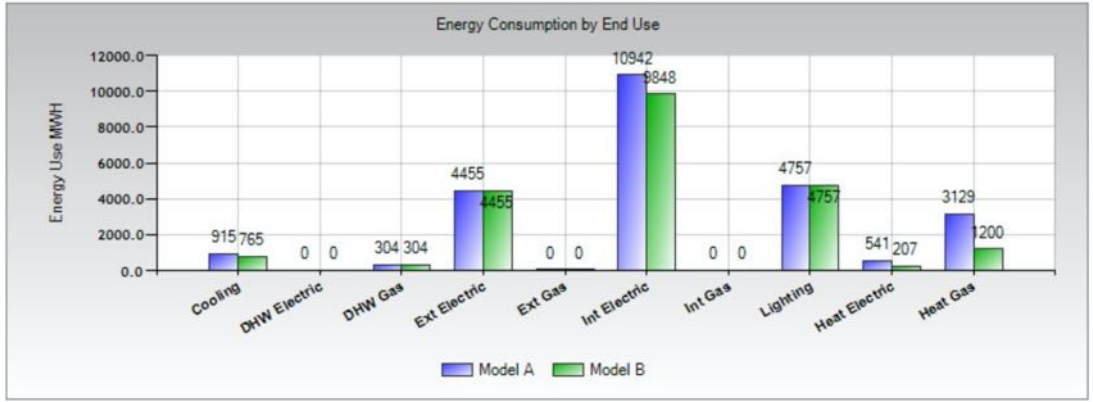
Opex Benefits:

- 20-40% Reduction in HVAC Energy Expenditures
- 4-8% Reduction on ENTIRE utility bill.
- Extend life of HVAC filters
- Extend life of HVAC equipment (sustainability)



Energy Savings –Retrofit Opportunity

- (1) or (2) years of energy bills
- Completed Energy Star Benchmark Input Form
- As much info as possible on the mechanical system (mechanical schedules, mechanical plans)



End Use	Result A	Result B	Potential Savings Amt	Potential Savings Pct
Cooling	914,723	764,863	-149,860 KWH	-16.4 %
DHW Electric	0	0	0 KWH	0.0 %
DHW Gas	10,391	10,391	0 THERMS	0.0 %
External Electric	4,455,360	4,455,360	0 KWH	0.0 %
External Gas	12	12	0 THERMS	0.0 %
Internal Electric	10,942,168	9,847,950	-1,094,219 KWH	-10.0 %
Internal Gas	0	0	0 THERMS	0.0 %
Lighting	4,757,469	4,757,469	0 KWH	0.0 %
Heat Electric	540,589	207,414	-333,175 KWH	-61.6 %
Heat Gas	106,786	40,972	-65,814 THERMS	-61.6 %
Total Electric KWH	21,610,309	20,033,055	-1,577,254 KWH	-7.3 %
Total Gas THERMS	117,190	51,376	-65,814 THERMS	-56.2 %

AtmosAir BPI vs. UV Light

Technology Comparison	AtmosAir BPI	UV Light
Reduces contaminants “in the space” at their source	**Yes**	No
Reduces odors	**Yes**	No
Reduces VOCs	**Yes**	No
Reduces particles	**Yes**	No
Sterilizes AHUs, coils, etc.	**Yes**	Yes
Effective against bacteria, viruses, and germs	**Yes**	Yes
Maintenance schedule	**Every 2 Years**	Annually
Contaminants must travel through filtration system	**No**	Yes

AtmosAir is active air cleaning technology. UV is a *passive* technology where the contaminants must travel through the UV light to become sterilized.

With a UV installation, building air is not being cleaned in real time, it must first be recycled through the returns to be sanitized.

The amount of contact time the contaminants have with UV light is in the milli-second or even nano-second range. This does not allow a thorough reaction of all the contaminants in the unit, let alone in the space.

SPORTS CASE STUDIES AND PROJECTS

The Dallas Cowboys have been associated with AtmosAir for many years now and the transition from our old facilities in Irving to the state of the art facilities in Frisco certainly included AtmosAir. Our air quality is paramount for the continued good health of the players and staff as we go about the strenuous season of the NFL. Our successes are, in part, due to the effects of such a system as AtmosAir. Ilook forward to continued success as we tackle the seasons ahead.

-Jim Maurer ATC, LAT, Dallas Cowboys, VenuesNow (2019)

Staples Center

Case study: 20% HVAC cost savings and 90% reduction in VOCs led to full stadium install.

US Bank Stadium

Installed throughout all air handlers.

New England Patriots

Case study: Less allergy medication given out to players over course of one-year study.

SoulCycle

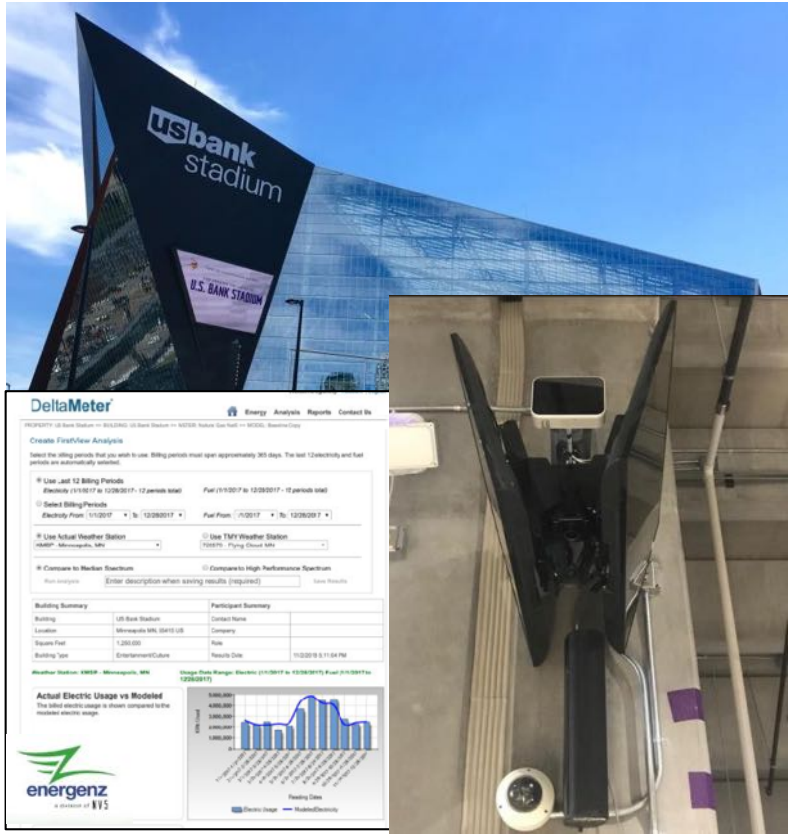
More than 50 locations with AtmosAir installed.

Case Study | US Bank Stadium

Energy Savings and IAQ Project

- **(122) AtmosAir 508FC Installed**
- **(50) AtmosAware IAQ Sensors**

Energy Savings Due To Outside Air Reduction			
	Electricity	**Chilled Water**	**Total**
June '19	$ 30,058	$ 43,164	$ 73,222
July '19	$ 9,165	$ 12,676	$ 21,841
August '19	$ 39,122	$ 43,036	$ 82,159
		3-Month Total =	**$ 177,222**
Filter Maintenance Savings			
Removal of 205 Final Filters (Merv 13&14)			
Filter Cost & Labor - **Monthly Savings =**			**$ 3,566**
First 3-months Total Savings =			**$ 187,920**



AtmosAir at the Staples Center in Los Angeles, CA.

Case Study| Dallas Cowboys Headquarters and Training Facility

SITUATION

The Dallas Cowboys wished to be proactive with the health of their locker rooms regarding allergens, airborne illnesses such as Staph and MRSA, and bacteria. Systems were tested on a trial basis in the locker room areas.

RESULTS

Trainers, staff members, and players, who were unaware of the system installation, began commenting on the improved air quality.

Following the AtmosAir installation, trainers reduced dispensing Cetirizine, the drug commonly known as Zyrtec which treats hay fever and allergy symptoms. Zero cases of MRSA or H1N1 have been reported since the installation.

Since the trial, AtmosAir has been stalled throughout the entire 100,000 square foot training facility, in the coaches' office, rehab areas, meeting rooms, administration areas, and new training center in Frisco, TX.

Dallas Cowboys' return on investment was seen within one year due to HVAC cost savings.

AtmosAir and the Dallas Cowboys

Staples Center

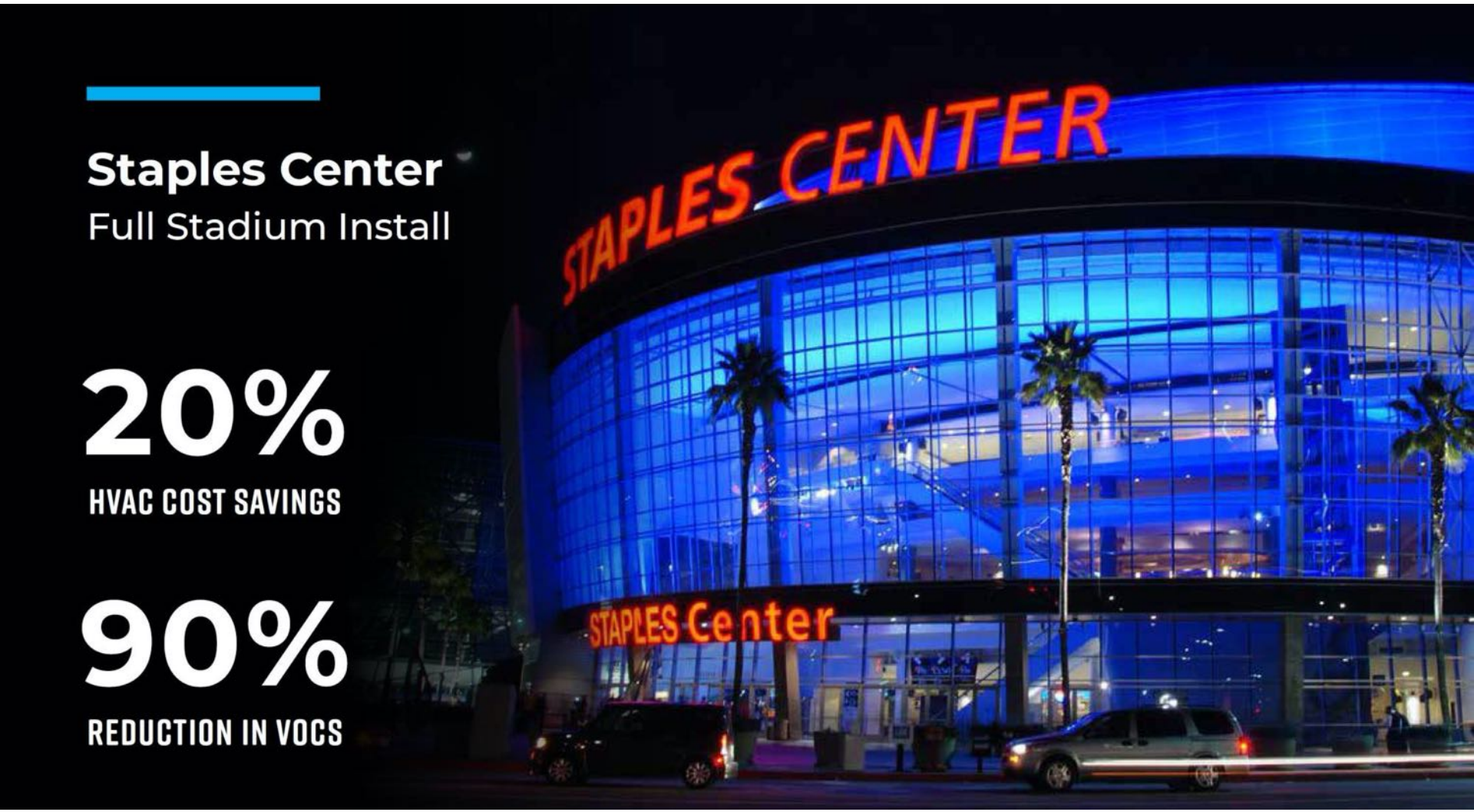
Full Stadium Install

20%

HVAC COST SAVINGS

90%

REDUCTION IN VOCS



New England Patriots

AtmosAir Installed in Practice Facility

LESS ALLERGY MEDICATION WAS GIVEN TO THE PLAYERS OVER THE COURSE OF A ONE-YEAR STUDY

WORKPLACE CASE STUDIES AND PROJECTS

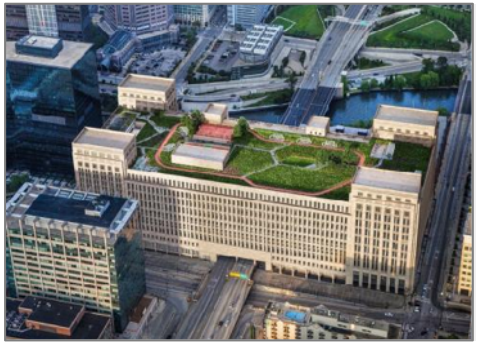
"I have been working with AtmosAir for years in the US, where we have installed the system successfully on several projects. AtmosAir delivers indoor air quality without emitting ozone. Their system reduces viruses, VOCs, PM, bacteria, allergens and the impact on the health and wellness of occupants is quantifiable. We have tested AtmosAir in over 300 different spaces for results."

— Dana Schneider, SVP of Energy and Sustainability, Empire State Realty Trust

CBRE Offices - Shanghai

AtmosAir installed in CBRE Shanghai Park Office

(2019)



Old Post Office Chicago

Two million square ft. installation in Chicago

(2019)

Gensler

Installed in (8) offices. Air purification and real-time measurement of IAQ. Gensler pilot project in LA showed 90% reduction in VOCs.

Empire State Realty Trust

6 buildings; 3.5M sq ft of installed space.

HEALTHCARE PROJECTS

JOHNS HOPKINS HOSPITAL

AtmosAir helped reduce VOCs by over 45%, and reduced five particle size ranges.

LBJ Hospital (TX)

AtmosAir helped reduce VOCs by over 65%, and reduced five particle size ranges.

NYU LANGONE

Whitepaper written by NYU Langone Professor on AtmosAir Solutions

METHODIST HOSPITAL (TX)

AtmosAir helped reduced major sewer gas odors and improve perceptual air quality.

SCHOOL CASE STUDIES AND PROJECTS

Arizona State University

Energy Innovations project – 16 buildings; AtmosSmart for demand control ventilation and energy efficiency.

University of Colorado

ME Engineers; Reduction in HVAC by 15%; Real-time IAQ measurement.

University of Maryland

VOCs and PM reduced, ventilation reduced by 50%.

USC

Four buildings on campus with Atmos installed.

AIRPORTS CASE STUDIES AND PROJECTS

Jet fumes, CO2, viruses, and bioeffluents all contribute to poor air quality in and around airports as well staggering HVAC-related costs.

AtmosAir purifies conditioned air, allowing it to be recycled and recirculated. Less of the heavily polluted outside air is required to be drawn inside, resulting in significant energy savings and a cleaner environment with up to 90% less harmful gases and particles.

"We had been getting a lot of air quality-related complaints from travelers and employees at Tom Bradley Terminal," acknowledges Rich Yakel, LAX's HVAC supervisor. "Bipolar ionization was just being introduced at the time, and Bradley Terminal was going through a major renovation."

Yakel experienced the positive impact ionization systems can have on air quality while visiting a wastewater treatment plant that used the technology. "I saw, and smelled, for myself what it could do," he recalls.

LAX Los Angeles World Airports

CDA Chicago Department of Aviation

LGA LaGuardia Airport

Fort Lauderdale-Hollywood International Airport Broward County, Florida

CLT Charlotte Douglas International Airport

Minneapolis Saint Paul International Airport msp

YVR Vancouver International Airport Beyond, Every Day.

Port of Huntsville Huntsville International Airport

Narita Airport Connecting Japan to the World

Beyond enjoying improved air quality, LAX is performing less maintenance. "AtmosAir takes a lot of the load off of the carbon filtration system and reduces the amount of maintenance effort we have to put into it," explains Christensen.

HOSPITALITY CASE STUDIES AND PROJECTS

More and more hotel brands are meeting the growing demand for healthier, cleaner accommodations that combat issues like mold, bacteria, and viruses.

AtmosAir creates a measurably cleaner environment while helping the hospitality industry decrease their energy consumption and carbon footprint.

GAMING CASE STUDIES AND PROJECTS

Smoke and odors are huge concerns in the gaming industry. AtmosAir has helped many casinos create a healthier and more welcoming environment for their patrons.

Select clients include:

- **Rivers Casino** (Pittsburgh and Philadelphia, Pennsylvania)
- **Stations Casinos** (California and Nevada – 6 Casinos)
- **Twin River Casino Hotel** (Rhode Island)
- **Seminole Hard Rock Hollywood** (Florida)
- **Seminole Hard Rock Tampa** (Florida)
- **Seminole Casino Coconut Creek** (Florida)
- **Seminole Brighton Casino** (Florida)
- **Ocean Resort Casino** (formerly Revel Casino - Atlantic City, NJ)
- **Osage Casino Sand Springs** (Tulsa, OK)
- **Graton Resort & Casino** (Operated by Stations in California)
- **Palace Station Hotel & Casino** (Las Vegas, NV)
- **Emerald Island Casino** (Nevada)
- **Green Valley Ranch Resort Spa & Casino** (Las Vegas, NV)
- **Live! Casino & Hotel** (Maryland)
- **MGM Grand Detroit** (Michigan)

AtmosAir SOLUTIONS

HEARTLINE FITNESS

Be Well - Do More!

help@heartlinefitness.com

- D&P Webinar Series Recordings and Summary
- Wipes and Hand Gels Orders
- Schedule Disinfect and Protect Service
- Facility Signage
- Facility Re-Design and Flow Updates
- AtmosAir defense against airborne pathogens

800-262-3348

Disclaimer – these are consideration to help clients formulate a structured plan, and not a guaranteed solution to stop the contraction of any pathogen or specific virus.