Top Product Innovations

We appreciate the opportunity to present our Technology!

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The Truth about Indoor Air Quality

- According to the US Environmental Protection Agency, the air inside our homes, schools and offices is often two to five times more polluted than the outside air. We spend 90% of our time indoors. Children are naturally more susceptible to pollutants than adults because they take in more air relative to body size and because their developing organs and respiratory systems are more vulnerable to certain chemicals, particles, pathogens and allergens. As we continue to reduce the exchange of indoor and outdoor air with more energy efficient structures, we find the concentrations of VOC's (volatile organic compounds), pathogens, odors, mold and fungus spores increasing while the air ion concentrations necessary for healthy lives are significantly reduced.

Air Ions Defined

- What is called an *air ion*, or a charged air molecule, is really no such thing. Air is a mixture of gases, including nitrogen, oxygen, carbon dioxide, water vapor, and other trace gases, any one or more of which may be ionized. Ions are present naturally in the air, with positive ions usually exceeding negative ions by a ratio of 1.2 to 1. Typically, clean outdoor air contains 2000–3000 ions per cubic centimeter. Inside a building with natural ventilation, the number drops below 500/cm^3, and in most buildings with ducted air-conditioning systems, air ion levels above 100/cm^3 are rare. These low ion environments can make you sluggish and tired, cause breathing issues and overall ill health.

Ion Concentrations

Researchers have found that ion quantities are drastically reduced by atmospheric pollution in city areas and further reduced by static electricity or air conditioned systems inside buildings.

	Air Ions / cubic centimeter (cc)	
	Avg. Positive	Avg. Negative
Outdoors: Clean rural air	1200	1000
Outdoors: lightly polluted urban air	800	700
Outdoors: City Air	500	300
Indoors: Rural location house without air conditioning	1000	800
Indoors: Rural location office with modern air conditioned	100	100
Indoor: City location modern air conditioned office	150	50

Sick Building Syndrome

The trend to make our living and working environments more energy efficient has created tighter buildings with less leakage or transfer of air between the inside and outside. This trend creates an environment where the pollutants are not exhausted or diluted by the intake of outside air and the ion concentration remains low. The problems associated with this phenomenon (ie. SBS – sick building syndrome) have resulted in the creation of laws governing the building of commercial property, whereby commercial property must take in 30% outside air and thereby exhaust pollutants.

Problems Associated with SBS (Sick Building Syndrome)

- Sore Throat
- Dry Throat
- Cold or flu like symptoms
- Rashes or itches
- Tiredness or fatigue
- Blocked or running nose
- Dry itchy and tired eyes
- Coughs and/or sneezes
- Headaches
- Sleeping difficulties
- Short term memory
- Concentration problems
- Depression/pessimism
- Irritability/tension

ICC / IMC

- IMC 2006 & 2009 includes a provision for engineered ventilation systems
  - Section 403.2 – Exception

403.2 Outdoor air required. The minimum ventilation rate of outdoor air shall be determined in accordance with Section 403.3.

Exception: Where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be reduced in accordance with such engineered system design.

Benefits of Air Ionization in the Workplace

Researchers have concluded that ionization of the ambient air in the workplace brought about substantial reductions in sickness symptoms and sickness absenteeism with significant improvements in productivity.

Environmental Stress	Due to Ionization		
	Before Improve	After	%
Breathing difficulties	275.3	90.6	67.1
Sore throat	474.3	197.9	58.3
Dry throat	834.4	497.2	40.4
Cold/Flu like symptoms	681.9	270.4	60.3
Rashes or itches	437.8	285.8	34.7
Tiredness / fatigue	1019.5	495	66
Blocked or runny nose	740.5	324.5	56.2
Dry, itchy, tired eyes	863.4	330.6	73.2
Cough / sneezing	808.6	391.8	51.6
Headaches	745	302.6	71.6
Sleeping difficulties	581.8	390.3	32.9
Short term memory	427.1	285	33.3
Concentration problems	687.5	383	37
Depressed / pessimistic	482	268.5	44.3
Irritable tense	904.2	529.2	41.5

Types of Corona Ionizers

- Several methods of corona ionization are available to create and deliver bipolar ionized air to the space. These methods differ mainly in whether high-voltage ac, dc, or pulsed dc current is used to create ions.

- **AC Ionization – Glass Tube Technology – The Best the 1960's Had to Offer!** In alternating-current, glass tube technology, high voltage (1,600VAC to 3,000VAC) is applied to the interior electrode that cycles negative and positive at the line frequency of 50 or 60 Hz. The voltage produced must have sufficient energy to break down the glass tube's dielectric enabling a corona discharge to form and creating a path to ground located on the exterior of the tube. Ionization efficiency is low because the points (where the wires intersect on the wire mesh exterior) remain above the ionization threshold voltage for each polarity only a small percentage of the time. In addition, the high voltage required to induce the corona discharge also creates unsafe levels of ozone. The EPA has mandated ozone output of less than 0.05 PPM under any operating condition and glass tube technology cannot meet this requirement.

Needlepoint Patented Corona Ionizers

- **AC Ionization – GPS-IBAR Technology.** The GPS-IBAR is manufactured from extruded aluminum and 316 stainless steel needles inserted into a specialized molded core with air used as the dielectric. The needles are spaced 0.75" apart for optimum output and safety. Even under 100% RH conditions, a 0.75" spacing ensures no arching will occur. The GPS-IBAR can be submerged under water and it will still continue to operate. The power supply controls the voltage and cleans the line frequency to ensure equal amounts of positive and negative ions are produced. In addition, the GPS-7000 IBAR power supply prevents noise from being pushed back onto the power grid.

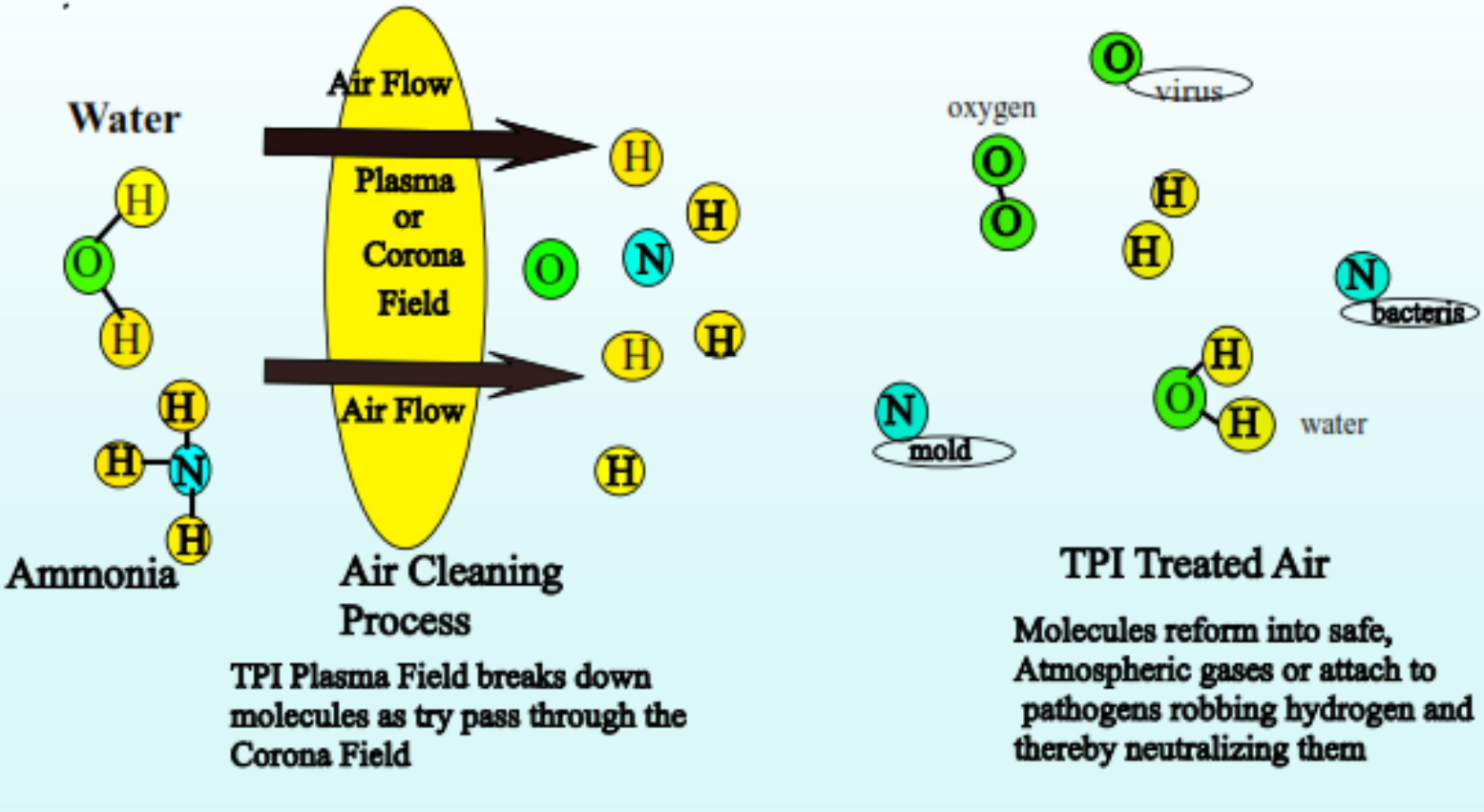
- **Steady-State DC Ionization – TPI and GPS Products.** High voltage of both polarities is continuously applied to pairs of positive and negative emitter points in standard direct-current technology; thus, the efficiency of ion production is better than that of AC ionization systems. Because lower operating currents can be used, steady-state DC ionization systems are more applicable to cleanroom use. The availability of separate positive and negative high-voltage supplies makes it possible to employ various schemes for monitoring and feedback control of ion balance to better than ±5 V.

How does Phenomenal Aire Needlepoint Ionization improve IAQ

- Produces Positive and Negative Ions in the environment
- Kills Viruses in the environment
- Kills Bacteria in the environment
- Kills Mold Spores in the environment
- Kills Fungus Spores in the environment
- Eliminates Odors in the environment
- Eliminates Allergens in the environment
- Breaks Down VOC's (Volatile Organic Compounds)
- Agglomerates particles in the air making them larger for more effective filtration
- Reduces or eliminates static electricity in the environment

You want Phenomenal Aire in you Home or Business

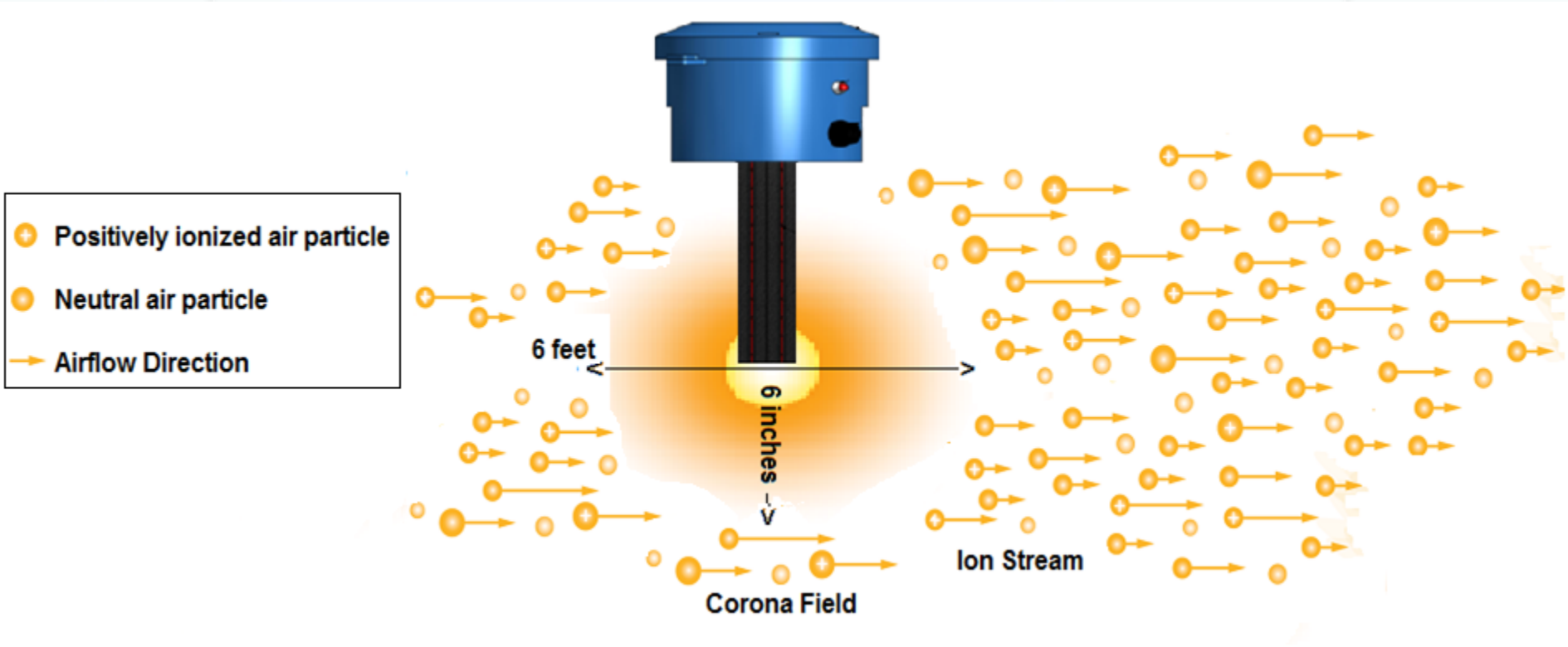
Ionization
Using TPI Needlepoint



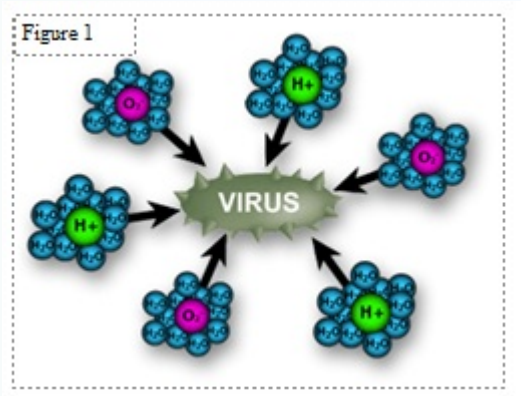
TPI Plasma Field breaks down molecules as try pass through the Corona Field

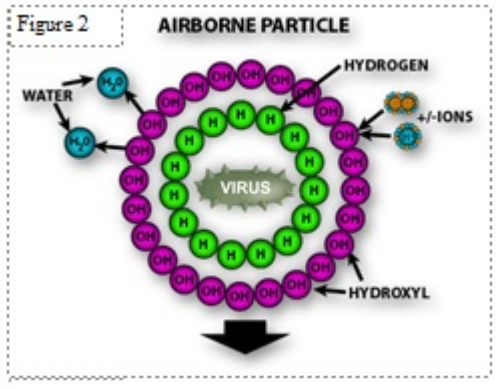
Molecules reform into safe, Atmospheric gases or attach to pathogens robbing hydrogen and thereby neutralizing them

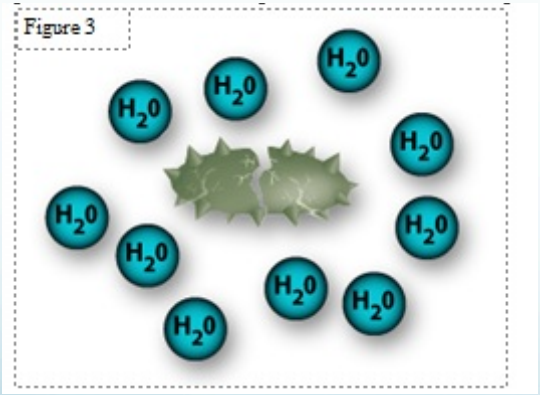
Needlepoint Corona Field



Bacteria, Virus, Spore and Allergen Neutralization







<u>Kill Virus, Bacteria & Mold, In The Space</u> - Positive and negative ions surround the pathogen (See Figure 1). Next, the ions rob the pathogens of the hydrogen necessary for them to survive (See Figure 2). During the final step, the ions eliminate hydrogen from the pathogen and then the plasma cleansing process is complete, making the airborne virus, bacteria or mold spore inactive (See Figure 3).

Studies that back up the science of Needlepoint Bi-Polar Ionization

GreenCleanAir

1251 Weatherstone Ct. Reston,VA 20194

703.927.7532 Steve@GreenCleanAir.com

Mold Reduction Report

November 11, 2011

Rodney Fugitt
Strategic Property Systems
10772 Alyssia Lane
Waldorf, MD 20603

Re: 9201 Messina Drive
Ft. Washington, MD

Dear Rodney,

We appreciate the opportunity to assess the quality of the air in this property.

On October 26, I took 2 airborne mold samples within the property in order to determine how many airborne spores were present. I used an air pump and drew 75 liters of air through an special filter which captures airborne mold.

The lab report results show that there were:

- 335,518 total airborne mold spores per cubic meter in the main room of the basement.
- 356,912 total airborne mold spores per cubic meter in the back bedroom of the basement.

The predominant species that were captured are chaetomium, cladosporium, aspergillus and penicillium. The airborne samples included several other mold species but they were in much lower levels.

On November 10, I took 2 airborne mold samples in the same places with the same air volumes and sent them to the same lab for consistent comparison analysis.

The lab report results show that there were:

- 9,212 total airborne mold spores per cubic meter in the main room of the basement.
- 2,667 total airborne mold spores per cubic meter in the back bedroom of the basement.

The predominant species that were captured are chaetomium, cladosporium, aspergillus and penicillium. The airborne samples included several other mold species but they are in much lower levels.

Therefore, the total airborne mold spores per cubic meter in the **main room** of the basement were reduced by **97.5%** and, the total airborne mold spores per cubic meter in the **back bedroom** of the basement were reduced by **99.5%.**

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703.927.7532 Steve@GreenCleanAir.com

Report (cont)

A point of explanation about the particular molds in the before and after tests. As seen in the November 4th lab report "comments", there were so many airborne mold spores that the "Spore count may be underestimated due to heavy particulate load". Indeed, with a debris rating of 4, fully "75% to 90% of a sample may be occluded", ie.-spores and spore pieces which cover the spores underneath them. (See footnotes on page 2). This means that there were likely many more airborne spores in the spaces on October 26th. The second samples of November 10th had a debris rating of 3 which lowers the occlusion factor to 26% to 75% of the sample. This explains the apparent discrepancy between the "higher" level spores in the second sample-basidiospores and cladosporium. While these two species may appear to have increased in the second sample, they were under-counted in the initial samples, so a precise count was impossible in the first air samples due to occlusion. The second sample is closer to their correct count and had the first sample not have been so occluded, it would have provided a correct and much higher count of these species.

Professional Observations

It is my understanding that a mold remediation firm had already taken out the moldy sheetrock and carpets from this property. This firm had then applied fungicides (Microban) to the basement walls and floors and then sealed the walls with a mold sealant (Fiberlock). I observed the white coating from the Fiberlock on the exposed walls.

When we visited the property on 10/26/11 and I first took air samples inside the basement, it had very pungent mildew odor which would be indicative of high airborne mold levels. The lab results supported this by showing that there were 335,518 to 356,912 airborne mold spores.

That was not the case when I returned to the property on November 10. The mold levels dropped to 9,212 and 2,667 respectively. The strong mold odors were totally absent. It is my understanding that you installed two Global Plasma Systems RN units on November 6th, so they had been operating for 4 days. These units produce cold plasma fields and it is significant that this cold plasma technology was able to effect the drop in airborne mold levels by 99.5% and 97.5%. In my professional career of taking airborne mold samples, I have never seen such a reduction as this within such a short period of time except by a total mold remediation. That this technology was able to produce such significant results post-facto a mold remediation, is unknown to me up till now. As the chairman of the nonprofit Indoor Environmental Standards Organization (IESO.org) committee which is writing the first mold investigation standard for educational facilities, it is my business to be aware of effective mold reduction technologies like cold plasma. Had the Lab results not have confirmed what my nose had no longer smelled, I would never have believed that this was possible.

The other significant feature of the second lab report was how the cold plasma had reduced the airborne stachybotrys levels. Stachybotrys mold is considered to produce one of the most toxic mold chemicals (mycotoxin) and the reduction to negligible levels was an important health benefit, along with the large drops in aspergillus and penicillium species which produce also mycotoxins.

Therefore, it is my professional opinion that if you allow the G.P.S. RN cold plasma unit to run longer, that the remaining airborne mold levels should be even further reduced.

If you have any questions, please contact me.

Regards,

Steve

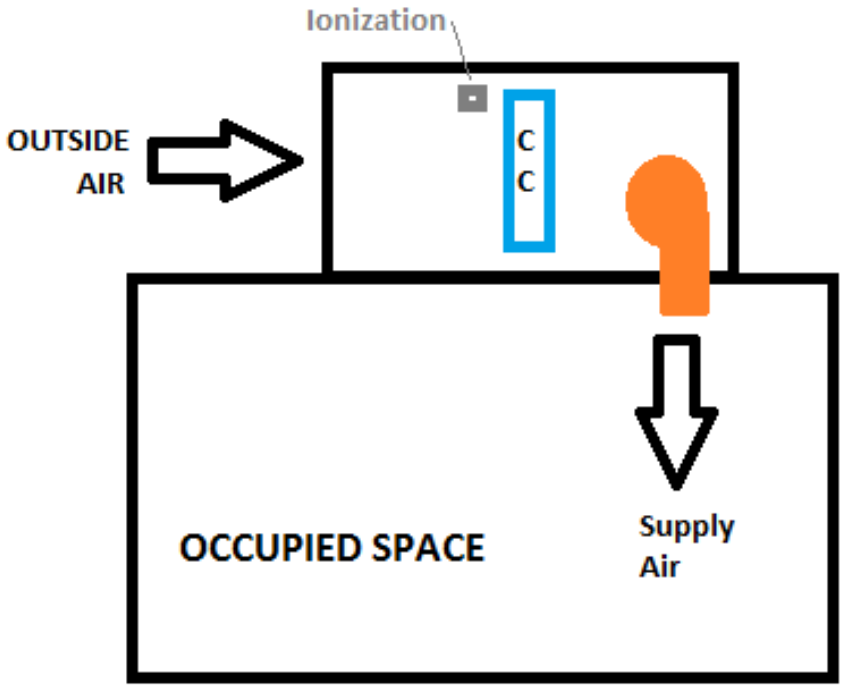
Steven Welty CIE, CAFS, LEED® AP

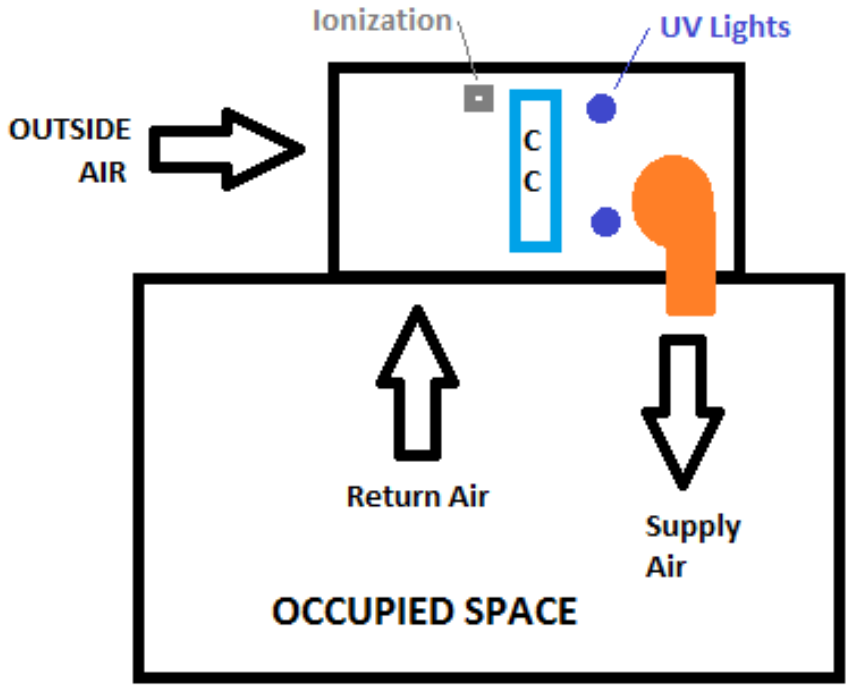
enclosure: Aerobiology Test Results

Independent Testing by World Renowned EMSL Labs

THE ONLY PRODUCT PROVEN TO KILL PATHOGENS IN THE SPACE

Pathogen	Time Exposed	Kill Rate
E.coli	15 minutes	99.68%
MRSA	30 minutes	96.24%
TB	60 minutes	69.01%





Odor and VOC Neutralization

Odor Control - The ions produced by TPI and GPS' needlepoint ionization break down gases with electron-volt potential numbers equal and below 12 to harmless compounds prevalent in the atmosphere such as oxygen, nitrogen, water vapor and carbon dioxide. The resultant compounds are a function of the entering contaminants into the plasma field. A simple example would be formaldehyde, which is produced by building furnishings and thought to be carcinogenic, breaks down to carbon dioxide and water vapor, thus eliminating the health hazard. Another example is ammonia that is produced by occupants (typical body odor smell), breaks down to oxygen, nitrogen and water vapor. As you can see, what chemical you start with determines how it reacts with the ionization field and how it breaks down.

Chemical Compounds Plasma Can Easily Control

CHEMICAL	FORMULA	Electron Volt
Xylene	C_8H_{10}	7.89
Styrene	C_8H_8	8.46
Methyl Ethyl Ketone	C_3H_8O	9.52
Ammonia	NH_3	10.07
Acetaldehyde	CH_3CHO	10.23
Ethyl Alcohol	C_2H_5OH	10.48
Formaldehyde	CH_2O	10.88
Oxygen	**O_2**	**12.07**
Methane	**CH_4**	**12.61**

Independent Testing on a 2,400 sqft Office

Health: Chemical Pollutants

TEST RESULTS

What We Found: Chemical pollutant levels were between 501-3000 ug/m3 for a day or more.

Action Recommended for Sensitive Individuals

Why is action recommended?

Chemical pollutants are generally a cause for concern when daily average levels are above 500 ug/m3.

Chemical pollutants are known to trigger asthma and allergy symptoms. At moderate levels, eyes and nasal passages can be irritated. Some people can experience nausea and headaches. At very high levels, they can even affect normally healthy adults by overworking the liver and kidneys. Children, the elderly, and pregnant women are more susceptible.

Source: European Union (EU); Leadership in Energy & Environmental Design (LEED); Environmental Protection Agency at Research Triangle Park (EPA-RTP).

Powered by: airadvice
www.airadvice.com

ABOUT CHEMICAL POLLUTANTS

Levels can build up in your home's air due to usage of chemical products and heating/cooling system issues.

Sources: Off-gassing from building materials, carpeting, furniture and other synthetic materials, fuel fumes, scented products and air fresheners, personal care products, many household products such as paint, glue, and plastics.

Possible heating & cooling issues: Lack of fresh air introduced into home (either inadequate mechanical ventilation or none present), no chemical pollutant removal equipment.

RECOMMENDED ACTION

There are many steps you can take to control sources of chemical pollutants. You can:

- Limit use of air fresheners
- Ventilate or store chemicals outside

3765 ug/m3 Initial Chemical Level

Final Chemical Level 231 ug/m3

Health: Chemical Pollutants

TEST RESULTS

What We Found: Chemical pollutant levels were below 500 ug/m3.

No Action Necessary

Why is no action necessary?

Chemical pollutants are generally not a cause for concern when daily levels are below 500 ug/m3.

Chemical pollutants are known to trigger asthma and allergy symptoms. At moderate levels, eyes and nasal passages can be irritated. Some people can experience nausea and headaches. At very high levels, they can even affect normally healthy adults by overworking the liver and kidneys. Children, the elderly, and pregnant women are more susceptible.

Source: European Union (EU); Leadership in Energy & Environmental Design (LEED); Environmental Protection Agency at Research Triangle Park (EPA-RTP).

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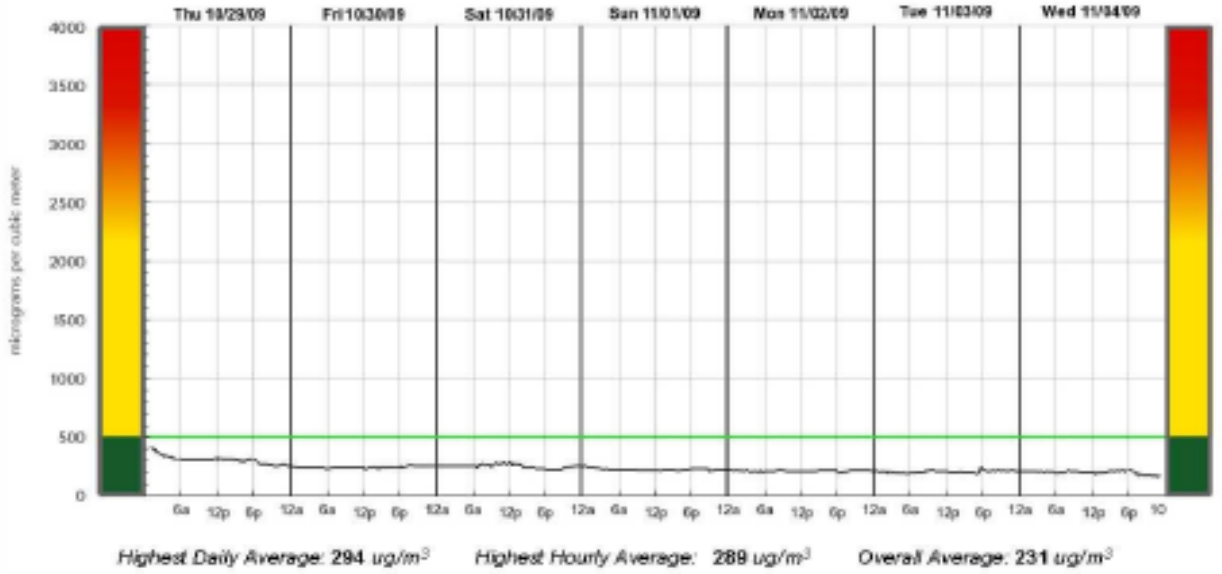


Highest Daily Average: **294** *ug/m³* *Highest Hourly Average:* **289** *ug/m³* *Overall Average:* **231** *ug/m³*

ABOUT CHEMICAL POLLUTANTS

Levels can build up in your home's air due to usage of chemical products and heating/cooling system issues.

Sources: Off-gassing from building materials, carpeting, furniture and other synthetic materials, fuel fumes, scented products and air fresheners, personal care products, many household products such as paint, glue, and plastics.

Possible heating & cooling issues: Lack of fresh air introduced into home (either inadequate mechanical ventilation or none present), no chemical pollutant removal equipment.

RECOMMENDED ACTION

None -- no action necessary. For more information on indoor air quality, see:

- www.airadvice.com

IAQ Applications for Phenomenal Aire

Applications

First and Foremost Your Home HVAC System

OA Reduction

- Education
- Hospitality
- Worship
- Veterinary
- Sports Arenas
- Restaurants
- Businesses

Critical Environment

- Waiting Areas
- Patient Rooms
- Burn Center
- Cancer Center
- TB Isolation
- DOD / State Dept.
- Day Care Centers
- Nursing Homes

Pathogen Control in the Space!

Residential Applications

Benefits of Phenomenal Aire in Residential Applications VS Other IAQ Devices

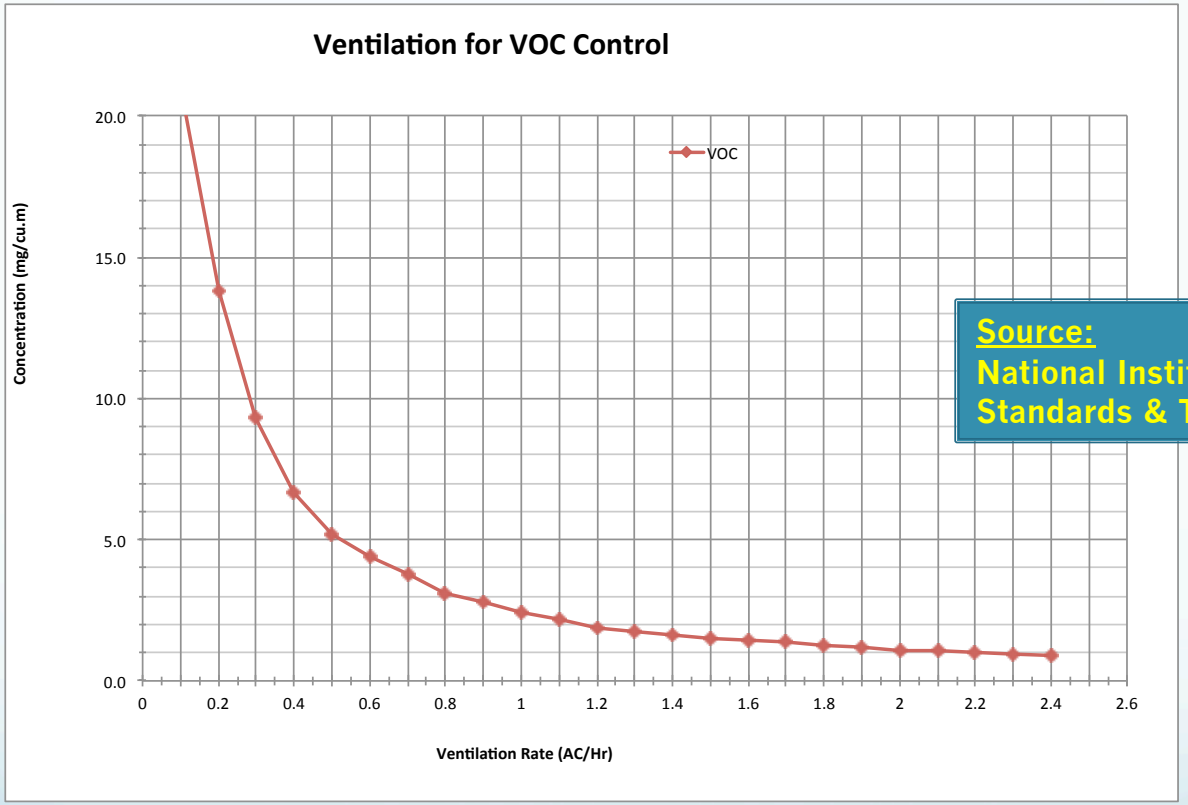
- No Replacements Parts
- No Fragile glass bulbs
- No detectable Ozone
- Does not harm HVAC equipment
- Produces Ions in the environment
- Easy to install

Commercial Applications

Benefits of Phenomenal Aire in Commercial Applications VS Other IAQ Devices

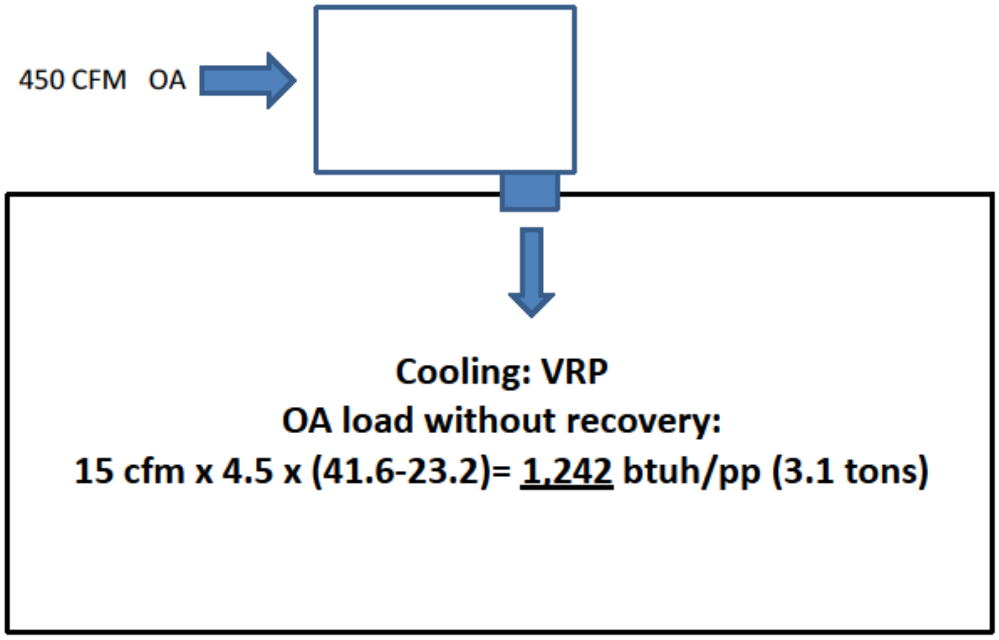
- No Replacement Parts
- No Fragile Bulbs
- No detectable Ozone
- Does Not Harm HVAC equipment
- Produces Ions in the environment
- Can Eliminate Sick Building Syndrome
- Reduces energy costs

OA Does Not Control IAQ Alone!



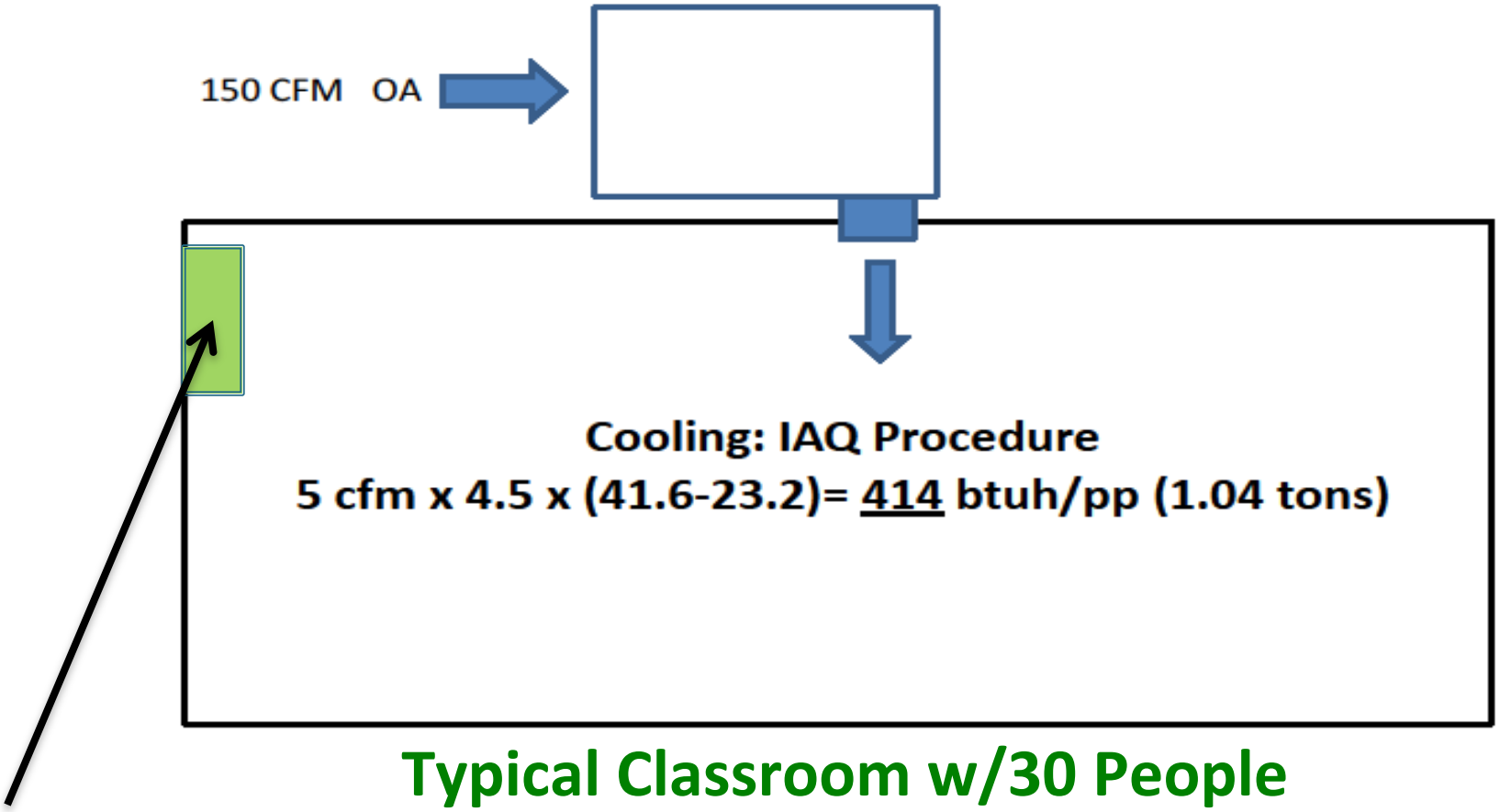
Source:
National Institute of Standards & Technology

Ventilation Rate Procedure w/o Energy Recovery Unit

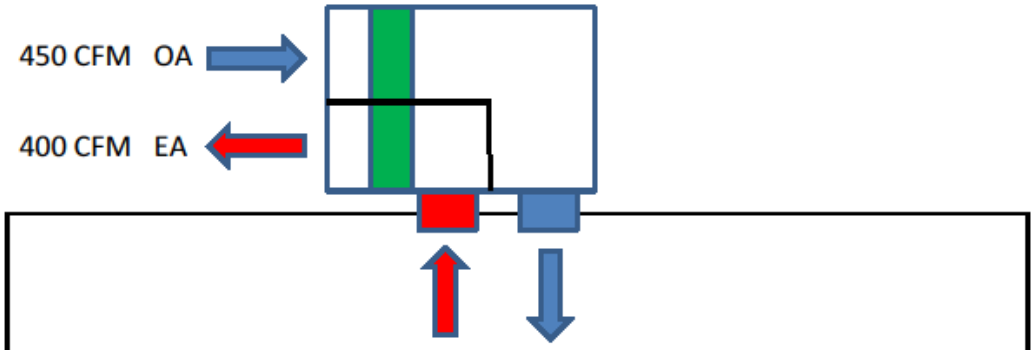


Typical Classroom w/30 People

IAQ Procedure with Energy Recovery Unit



Ventilation Rate Procedure w/o Energy Recovery Unit

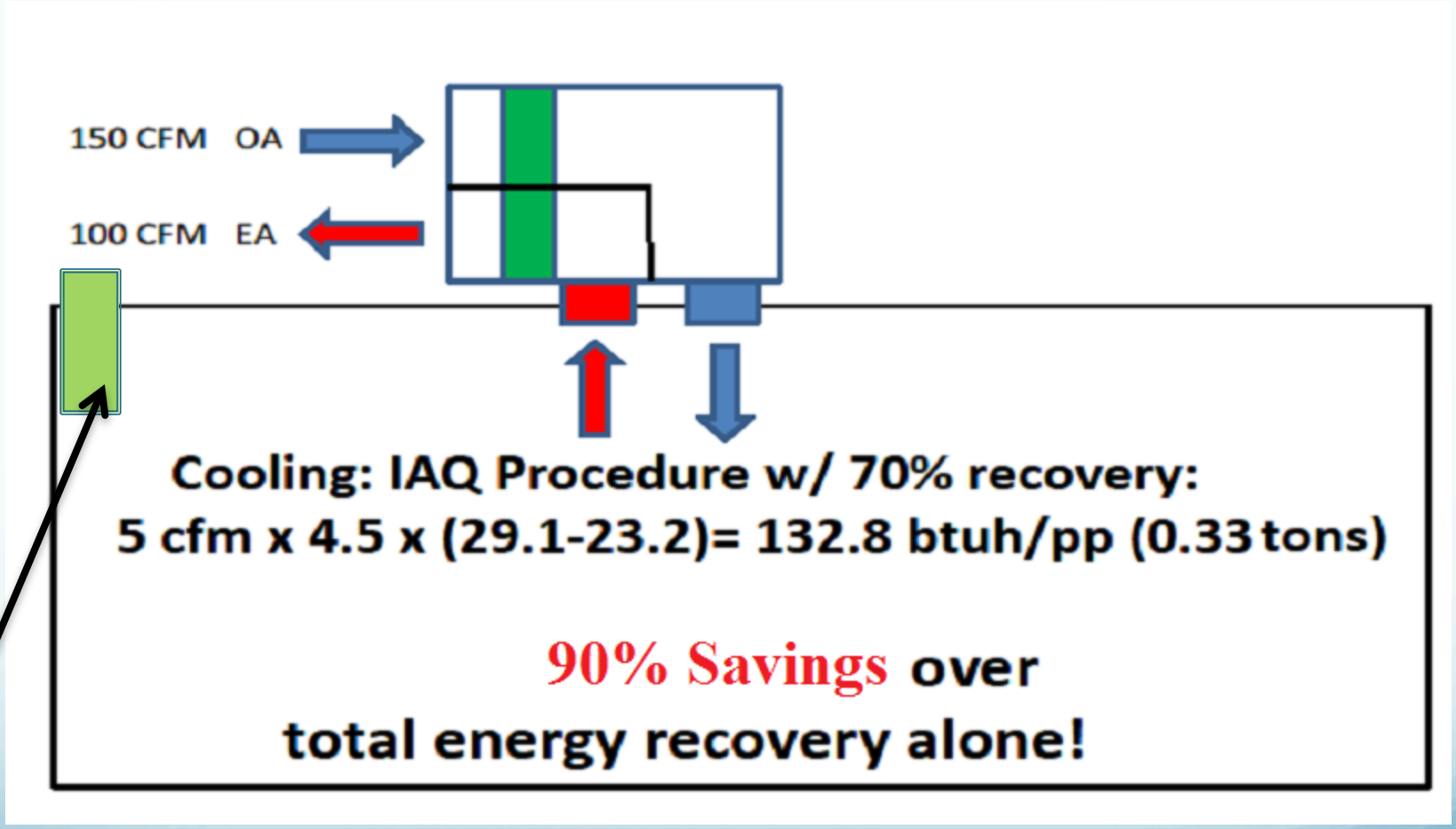


Cooling: VRP – OA load with 70% enthalpy recovery:

15 cfm x 4.5 x (29.1-23.2)= 398.2 btuh/pp (1.0 ton)

Typical Classroom w/30 People

IAQ Procedure with Energy Recovery Unit



Wall Unit w/TPI

Typical Classroom w/30 People

The Big Picture w/ OA Reduction

- Atlanta Area Schools (120,000 ft^2)
- Typical First Cost Savings = $300,000 to $400,000
- or $2.50/$ft^2$

- Typical Annual Energy Savings = $48,000
- or $0.40/$ft^2$

- TPI Adds **VALUE** Not Cost!

System Comparison Summary

- 450 CFM OA – No *ERU or IAQP & Filtration 3.10 T
- 150 CFM OA using IAQP & filtration 1.04 T
- 450 CFM OA with *ERU 1.00 T
- ***150 CFM OA with *ERU & IAQP &Filtration 0.33 T***

*ERU – Energy Recovery Unit

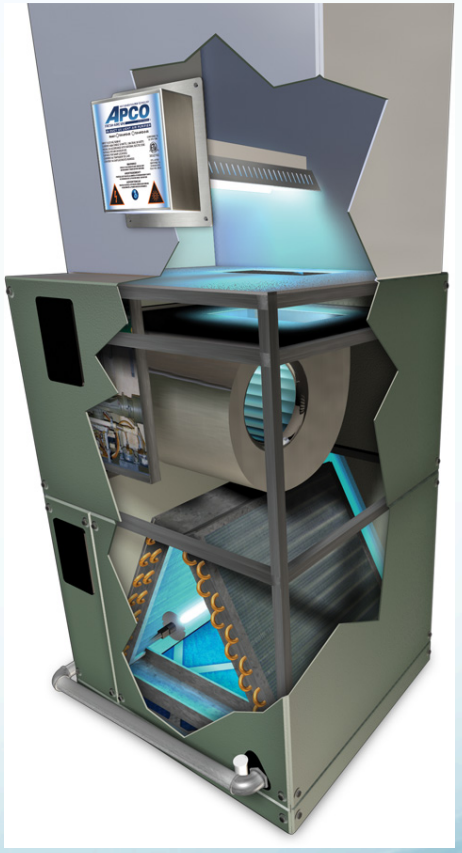
Benefits of Needlepoint Bi-Polar Ionization

- Lower First Cost
- Increased Ion Concentration
- Increased Energy Savings
- No Replacement Parts Required
- Improved IAQ
- Mold, Bacteria & Virus Control
- Static Electricity Control
- Odor Control
- No Harm to HVAC Equipment
- Reduced Allergens
- Compact and Fits Every Application
- Essentially No Maintenance

Overview of the History of IAQ Devices

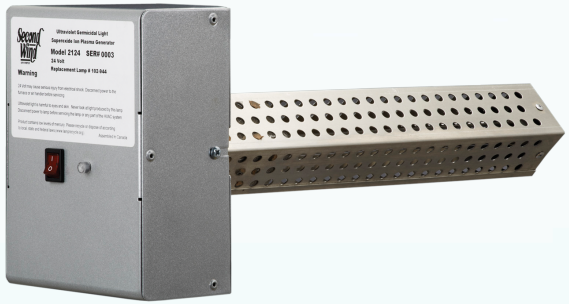
Other IAQ Devices

- **UV Light generator.** These generate UV Light to kill germs and other living organisms, as UV light is harmful to all living things. They usually can achieve a very high kill-rate in non-moving to slow moving systems. The kill rates are dependent on UV light intensity and contact time. Just like UV light can damage your skin on bright days during long exposure, it does little to your skin in very short exposures. UV light systems cannot work without seeing or contacting the material (ie. Spore, bacteria, virus, etc.) However, they do not remove dust particulates, odors, gases (e.g. VOCs or volatile organic compounds). This type of IAQ device is typically used to keep mold on the coils. It will do a good job on the areas it directly shines on, while other areas might see mold growth. Most manufacturers require the UV light remain continually on to help extend the life of the expensive bulb. Also, the remnants of the dead germs, fungi or pollen that have been killed by UV radiation would be recirculated back into the air. The UV lights must be replaced periodically. The UV lights are known to degrade any polymeric material it shines on in the HVAC system due to the lack of UV absorbers in these polymers (plastics, vinyl, etc.)



Other IAQ Devices

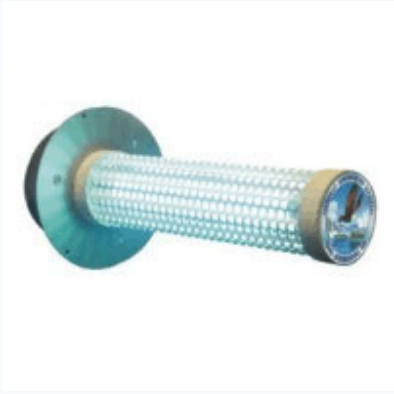
- **Photocatalytic generator.** These devices shine UV light onto Titanium Dioxide (TiO^2) which produces OH radicals. OH radicals are extremely reactive and only last a milisecond. These devices have the same advantages and disadvantages as UV devices. However, the Hydroxyl radicals will react with pathogens, odor and VOC's to control these contaminants. In general this class is weak in protection against particulate matter, which is the major contaminant in a haze situation. The UV lights must be replaced periodically and will degrade polymers.



- **Ozonizer**. These generate ozone in order to kill germs, remove odor & VOC's. They are usually quite successful in doing this. However, because ozone is itself a dangerous contaminant (as listed by the US EPA and Singapore's National Environmental Agency), this should only be used in low traffic areas (like rubbish dumps) never used in indoor applications where people live, work, play, etc. The bulbs must be replaced every year or so.

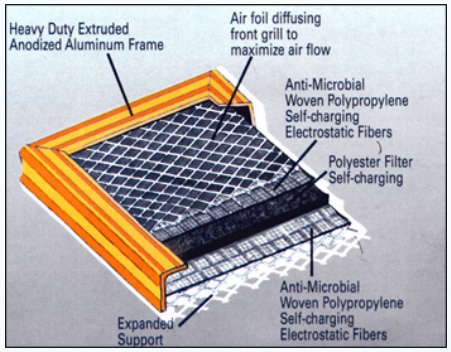
More IAQ Devices

- **Advanced Hydrated Photocatalytic Oxidation technology**
  Basically, it is a broad spectrum high intensity UV light, targeted on a patent-pending quad-nano Xtreme™ quad metallic catalyst, in a moist atmosphere. This will produce hydroxyl and super oxide ions (ROS – Reactive Oxygen Species). Low moisture will produce lower ions. These are typically installed on the supply side which provide no treatment for the coils. They are also continuous on operation to extend bulb life. This technology produces ozone and UV bulb must be replaced every 2-3 years. Same problems with UV polymer degradation.



More IAQ Devices

- **Electret or electrostatic filter**. These filters are given a permanent electrostatic charge which traps dust particles. The most common filters of this type are 3M filters, and some filters made to be fitted into the air-con. Their maximum efficiency is normally only 60% of a True HEPA, with the actual operating efficiency is far lower, usually lower than that of a HEPA-type filter. But they are cheaper to maintain.



- **Electronic air cleaner**. These work in a similar way with electret filters, but are made of aluminum, and use electricity to charge the plates. Like the electret, their maximum efficiency is normally only 60% of a True HEPA, with the actual operating efficiency being far lower. Their advantage is that they are washable, so there are some savings. Their disadvantage is that they produce ozone, which is a contaminant, and they produce sparks and pops during operation

More IAQ Devices

- **Activated carbon filter**. This is usually used as a prefilter (i.e. the filter used to trap larger particles to extend the lifespan of main filters), because of its usually low filtration rate. It is strong in removing odour. However, do check how thick and big the filter is, as some versions of carbon filters are so "sparse" that their effectiveness is extremely low.

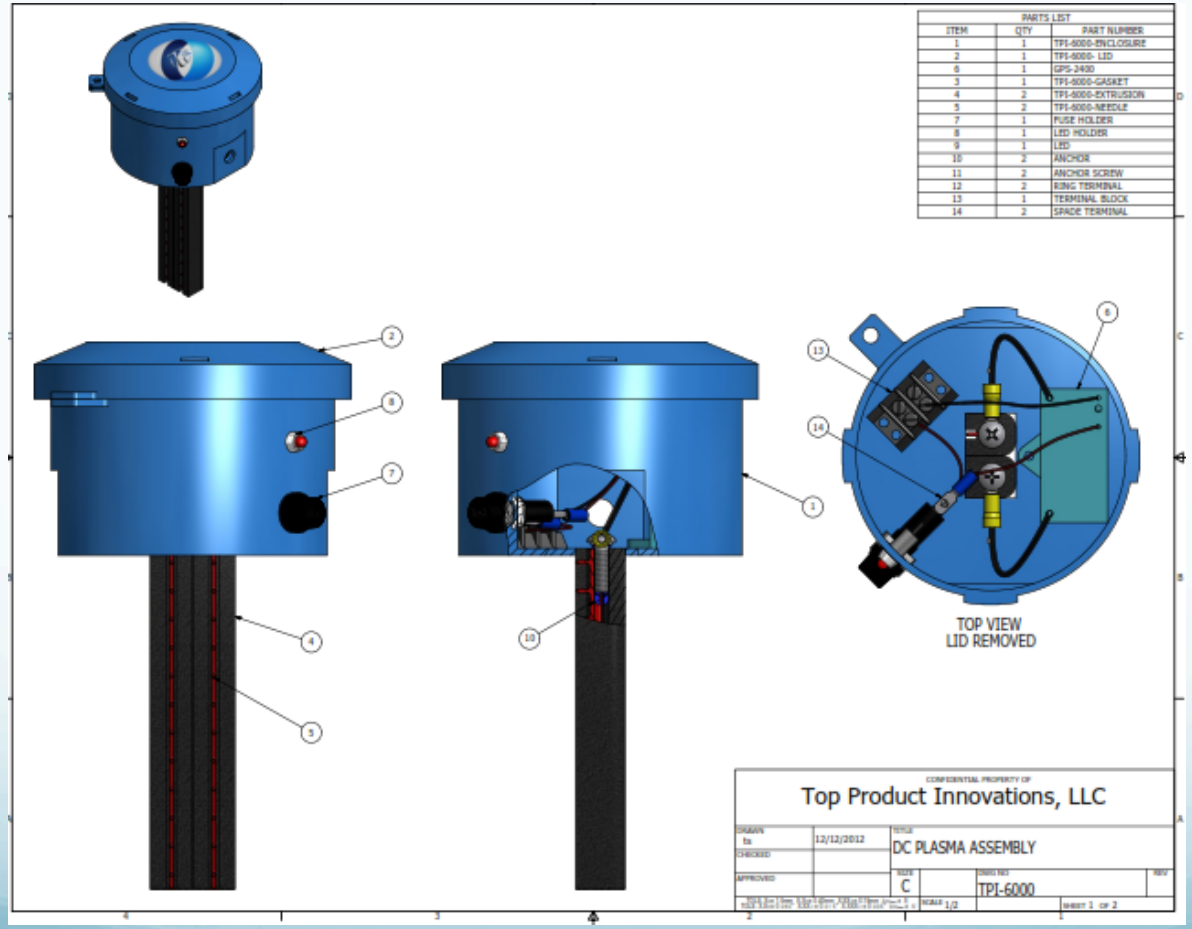
- **Old Plasma Ion Tube Technology (Bi-Polar Ionization)** – plasma cluster ion technology using UV glass tubes with wire mesh over tubes to create ions. High voltage is applied to UV tube which discharges to the metal sleeve. This creates ions and ozone. The problem is in reducing the voltage to reduce ozone, will create lower amount of ions. Tubes have to be replaced every 1-2 years.

Technology Comparison

	TPI Phenomenal Aire	Corona Discharge Ion	UV Technology	Photocatalytic	Ozonizer	Adv. Photocatalytic
Does unit create detectable ozone	No	Yes	Yes	Yes	Yes	Yes
Does unit require fragile glass tubes	No	Yes	Yes	Yes	Yes	Yes
Does unit require replacement tubes	No	Yes	Yes	Yes	Yes	Yes
How often do tubes need to be replaced	NA	1-2 yrs	1-2 yrs	1-2 yrs	1-2 yrs	1-2 yrs
What is the approximate cost of replacement tubes	NA	$200+	$200+	$200+	$200+	$200+
Does unit kill bacteria, viruses, mold, fungus	Yes	Yes	Yes	Yes	Yes	Yes
Does unit have to see bacteria, viruses, etc. to work	No	No	Yes	No	No	No
Does unit eliminate odor and smoke	Yes	Yes	No	Yes	Yes	Yes
Does unit neutralize VOC's and Allergens	Yes	Yes	No	Yes	Yes	Yes
Does unit aid conventional particle filtration	Yes	Yes	No	No	No	No
Does unit eliminate static electricity	Yes	Yes	No	No	No	No
Can unit be mounted in air supply	Yes	Yes	Yes	Yes	No	Yes
Can unit be mounted in return air	Yes	No	Yes	Yes	No	Yes
Can unit operated from 24 VAC	Yes	No	No	No	No	No
Can unit be submerged in water	Yes	No	No	No	No	No
Can unit be mounted in a ductless split	Yes	Yes	Yes	Yes	No	Yes
Does unit HARM HVAC equipment	No	Maybe	Yes	Yes	Maybe	Yes

Specifications and Installation of the Phenomenal Aire Series C6.0 CPG IAQ Device

TPI Phenomenal Aire Series C 6.0 CPG



Specifications

- Air Flow Capacity – 0 to 6,000 CFM per unit
- Pressure Drop – < 0.05” WC
- Needlepoint Probe Length – 6”
- Electrode – Carbon Resin
- Temperature Range – -20F to 140F
- Humidity Range – 0-99%
- Mounting Box – ABS UL 94 Plastic
- Power Head Dimensions – 5” Diameter x 3.5” Hi
- Warranty = 2 years

Voltage – 24VAC

Power Consumption – 12 VA

Frequency – 50 – 60 Hz

Air Flow Sensing - Integral

Ionization Generation – Needlepoint Bi-Polar Ionization

Ion Status - Green LED

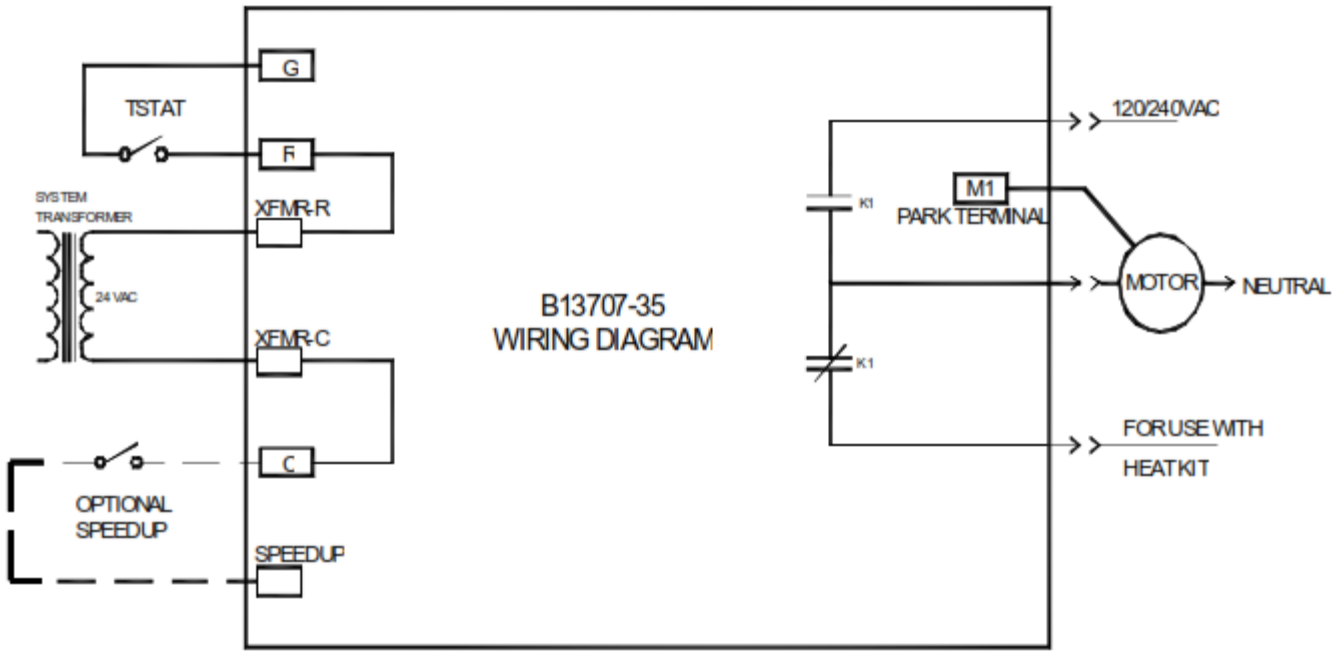
Weight – 5 lbs

Made in the USA

Installation

- **Installation – Duct Mounting**
- Mount TPI Series C6.0 CPG so the needlepoints (tips in black bar) are perpendicular (90 degrees) to the direction of the air flow preferably on the return side of the coils, just before the coils. Arrow on bottom of canister should point in the direction of the air flow. Before installing please turn off blower motor
- **Disconnect power to the air handler in which the product will mount**
- Drill a 2.0” hole in the duct, preferably before the cooling coil, but after a prefilter. Do not mount the product before a filter as the filter will stop the ions.

ELECTRONIC BLOWER TIME DELAY RELAY

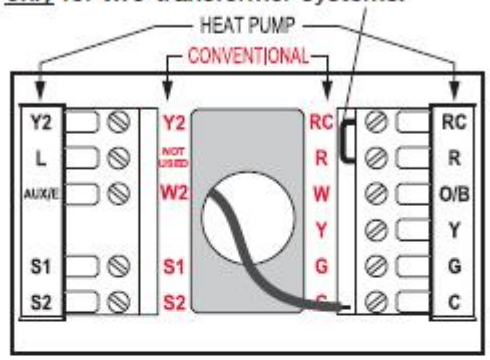


The Electronic Blower Time Delay Relay provides power to the blower motor with a delay of 7 seconds after 24VAC is applied to "G". After 24VAC is removed from "G", the blower motor output is de-energized after a delay of 65 seconds.

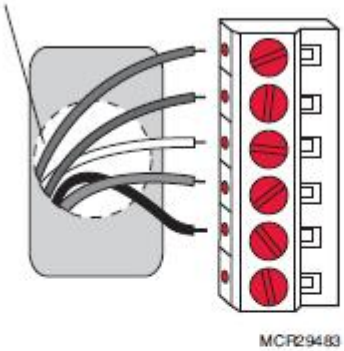
Honeywell Wiring Diagram

Wiring

Remove factory-installed jumper only for two-transformer systems.



Push excess wire back into the wall opening. Plug wall opening with non-flammable insulation.



Terminal Designations

Shaded areas below apply only to **TH8320/TH8321**.

Conventional Terminal Letters:

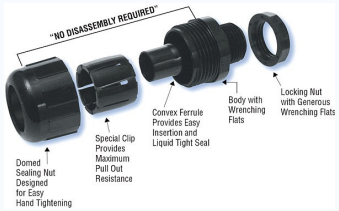
R	Heating power. Connect to secondary side of heating system transformer.
Rc	Cooling power. Connect to secondary side of cooling system transformer.
C	Common wire from secondary side of cooling transformer (if 2 transformers).
W	1st stage heat relay.
W2	2nd stage heat relay.
Y	1st stage compressor contactor.
Y2	2nd stage compressor contactor.
G	Fan relay.
S1	Optional outdoor or remote sensor.
S2	Optional outdoor or remote sensor.

Heat Pump Terminal Letters:

R	Heating power. Connect to secondary side of heating system transformer.
Rc	Cooling power. Connect to secondary side of cooling system transformer.
C	Common wire from secondary side of cooling system transformer.
Y	1st stage compressor contactor.
Y2	2nd stage compressor contactor.
Aux/E	Auxiliary/Emergency heat relay.
G	Fan relay.
L	Heat pump reset (powered continuously when System is set to Em Heat; system monitor when set to Heat, Cool or Off).
O/B	Changeover valve for heat pumps.
S1	Optional outdoor or remote sensor.

ENGLISH

- Unscrew top of TPI Series C6.0 CPG while holding the base in place
- Fasten TPI Series C6.0 CPG to the ductwork through two dog ears or hole markings inside housing using the two self tapping sheet metal screws.
- Thread power supply wires through supplied fitting nut and then through one of the two holes on the side of housing. Make sure to use the hole that allows for easy sight of LED light. Use supplied plug to seal the hole not in use.



- Feed wire through the other half of the fitting. Screw the two pieces of the fitting together. (nut on inside of housing and second piece on outside). The installer may use Heyco liquid tight tubing (provided by others) or as local codes require based on the installation location.
- Connect wires to blower motor terminals making sure the hot side **(+24VAC)** is connected to the red wire inside housing**. Polarity on this unit is important because it is a DC unit**. Connect the black wire to ground or the neutral wire.
- Screw cover onto housing by holding the housing with one hand and the lid with the other. Fasten cover to housing with zip tie.
- Return power to blower motor. Green LED on TPI Series C6.0 CPG should be on, indicating unit is properly working.

If you must mount to duct board follow these instructions. I suggest using supplied toggle bolt since it will have a large surface area when expanded inside the duct. You would need to unscrew the bolt from the wing structure, place the bolt through the mounting tabs, one on each side of the housing, then start the bolt back into the wing structure. You will then need to drill a hole large enough for the wing structure to fit through when folded up and push it through. Then screw down the bolt until the unit is snug.

Warnings

Do not touch electrodes or needles while operating – shock may occur
Do not use an extension cord to plug in the product
Always disconnect power before installing or servicing
Always disconnect power before attempting to replace the fuse
The product should not be installed behind a suspended floor/ceiling or a structural wall
This product is suitable for installing into a duct of metallic or fiber duct board
Follow all local and national electric codes when wiring

UL 867

Products tested by Intertek/ETL to prove compliance to UL 867.

UL 867 Section 37.2.1. "The test is to be conducted in a chamber having a volume of 950-1100 cubic feet with a minimum side dimension of 8 feet and a maximum height dimension of 10 feet…"

New UL 867 as of December 21, 2007 requires ozone peak and chamber testing

GPS results: Peak Ozone: 0.0042 PPM @ 2.0 inches from needles

Chamber: 0.007 PPM (24 hour test)

Max Allowed Limit: 0.05 PPM

TPI is 1/7 of the allowable limit!

This is specifiable and all manufacturers should comply!

In Conclusion Phenomenal Aire

- Outperforms the Competition
- Cost Comparable or less than the Competition
- Requires no replacement Parts
- Produces No Detectable Ozone
- Does Not Harm HVAC Equipment
- Has an Excellent quality Record
- Has a 2 Year Warranty

You want Phenomenal Aire in your Home or Business. You want Phenomenal Aire!!!

Top Product Innovations

You want Phenomenal Aire

in your Home or Business