



# SANUVOX

Ultraviolet Air & Object Disinfection Systems





# WHY SANUVOX?

Sanuvox is the leading manufacturer in Ultraviolet Air and Object Purification holding domestic and international patents, bringing to markets around the world, products and solutions for virtually any indoor air quality issue.

## THE SCIENCE OF ULTRAVIOLET

The Sun delivers specific UV wavelengths that destroy and deactivate biological and chemical contaminants that are introduced into the atmosphere. Sanuvox proprietary Mercury Vapor Ultraviolet Lamps produce the same UV wavelengths the Sun produces. UVC (Germicidal 254 nm) and UVV (Oxidizing 187 nm) produced using pure fused quartz glass are combined into one single UV Lamp/Emitter.

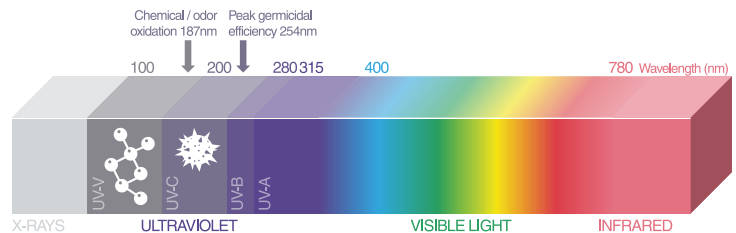
UVC energy attacks the DNA of a living cell, penetrating the cell membrane, breaking the DNA structure of the microorganism, inhibiting reproduction. UVC is effective in destroying biological contaminants and odors such as mold, bacteria and viruses. The Centers for Disease Control (CDC) recommends this method for destroying viruses such as tuberculosis.

UVV (Vacuum UV) is used for Oxidization; this is the portion of the Lamp that destroys chemicals and odors, such as cigarette smoke, VOC's, diesel fumes, formaldehyde, amongst others. Both UV wavelengths work together to destroy thousands of biological and chemical contaminants that continually circulate within the building's envelope.

Depending on the application, Sanuvox will use UVC, UVV, or a combination of both wavelengths to achieve the desired results.

### ASHRAE Chapter: UV Light Systems

Sanuvox is a proud on-going contributor to the standards and practices applied to Ultraviolet Air and Object Purification that have been adopted into the 2012 ASHRAE Handbook on HVAC Systems and Equipment. Ultraviolet Air and Object Purification is recognized as a proactive measure to protect and improve IAQ while significantly improving energy efficiency and reducing maintenance costs.



## YOUR BENEFITS

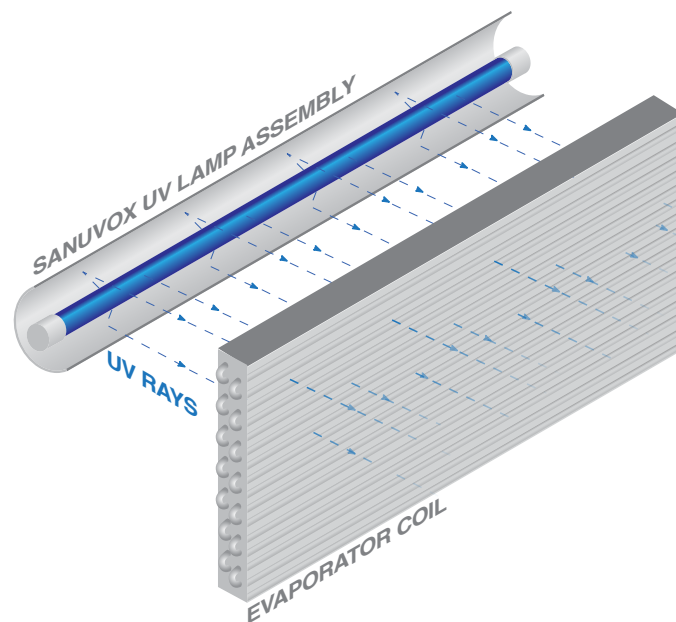
- Alleviate Sick Building Syndrome & Building Related Illness
- Reduce Absenteeism
- Improve Productivity
- Reduce Costs, Maximize Energy Efficiencies
- A Green Building Technology
- Destroy Odors and Chemicals
- Bio-Protection
- Dramatically reduce HVAC Maintenance Costs
- Extend Food Shelf Life
- A Healthier Indoor Environment



# WHY IS SANUVOX UNIQUE?

Sanuvox has designed, engineered and patented UV systems for different applications. For Airstream Disinfection the air velocities will be moving at hundreds or even thousands of feet per minute. The UV system (Figure A.) only has a fraction of a second (milliseconds) to bombard the moving contaminant with UV energy. In contrast, keeping a coil clean by preventing and destroying mold on the coil (Figure B.) is very different from airstream purification, because the coil as well as the UV system is stationary. The UV system has minutes, hours, days and even months to bask the coil with UV energy, not milliseconds.

This is why Sanuvox designed and patented two different types of UV systems; UV Air Purification and UV Coil Cleaning. Every bio-contaminant requires a specific dose of UV microwatt energy for destruction. Typically, a virus and a spore will be much more resistant to UV energy than a bacteria, and consequently they require a longer exposure time to UV energy in order to achieve the desired destruction rate.

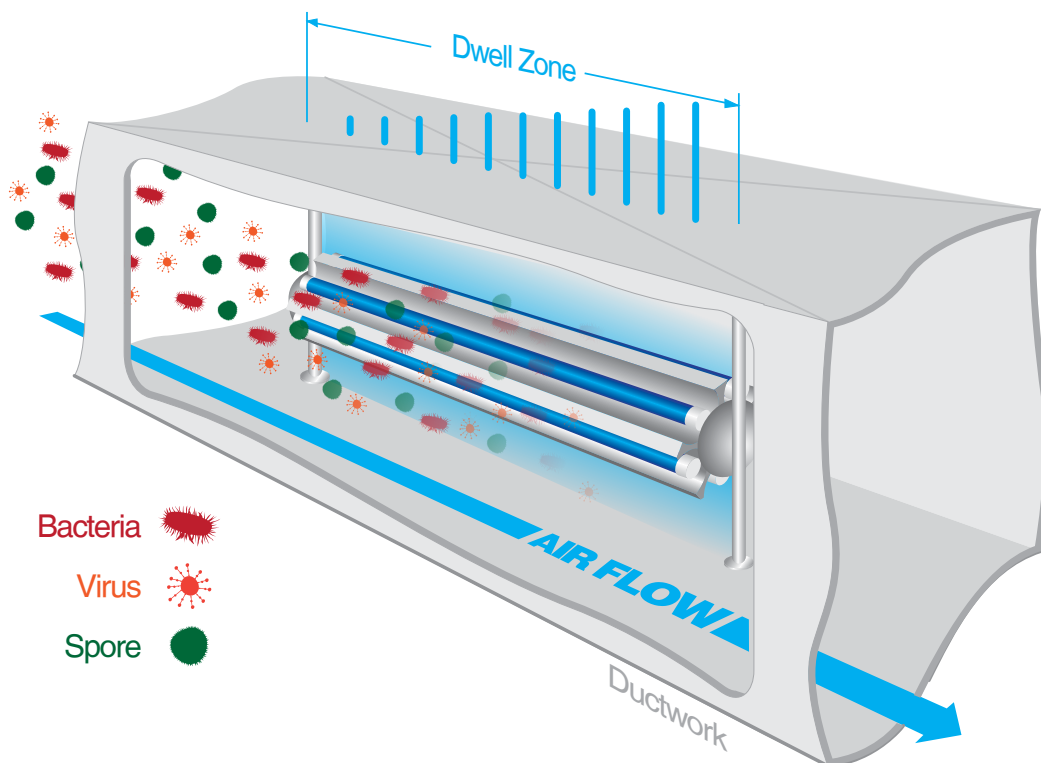


## A) AIRSTREAM PURIFICATION (below)

Illustrates the importance of a parallel UV installation in relation to the airstream in order to deliver the lethal UV dosage to the bacteria, virus and spore. A parallel installation increases the airstream Dwell Time (exposure to UV). Example taken from the EPA Homeland Security Sanuvox Test Report (Sanuvox UV Bio-Wall).

## B) UV COIL CLEANING (above)

Illustrates the use of the UV Lamp with the aid of an Aluminum Parabolic Reflector (patented). The reflector also protects the UV Lamp from dirt and bio-aerosols that may coat the UV Lamp (lamp fouling) while maintaining the ideal lamp temperature by preventing the air from striking the lamp causing the lamp to cool and lose efficiency (lamp cooling).



# UV BIO-WALL QUATTRO



## FEATURES

- Drastically improves Indoor Air Quality
- Continuously treats the entire duct
- Destroys up to 99.99% of biological and chemical contaminants on one pass
- 18" Lamp lengths
- 4 High-Intensity Pure Fused 19 mm Quartz UVC Lamps
- 4 Anodized Aluminum Parabolic Reflectors maximizes 360° of UV Energy
- LED indicators for ballasts and lamps

## ACCESSORIES

- Bio-Film Aluminum Foil for increased reflectivity



## PROVEN RESULTS

Tested by the Environment Protection Agency (EPA) and National Homeland Security Research Center (NHSRC) on Biological Warfare Agents (BWAs).

A Single UV Bio-Wall 50" showed greater than 99.97% destruction on one pass on airborne bacteria, 99% on viral and 93% on spore.

Sanuvox was the only manufacturer that contributed a single UV system and did not require any reduction in air-flow or duct modifications to achieve greater than 90% destruction on all three cross-sections of biological contaminants.

Detailed technical specifications available at [www.sanuvox.com](http://www.sanuvox.com)



# UV BIO-WALL

The patented UV Bio-Wall provides a “barrier wall” of UV Energy, destroying biological and chemical contaminants passing through it.

Each Bio-Wall uses 5 High Intensity 19 mm Pure Fused UVC Quartz Lamps, which are mounted to Anodized Aluminum Parabolic Reflectors that reflect the full 360° of Germicidal Radiation. The Bio-Wall is mounted parallel to the airstream in order to maximize the contaminant’s contact time with the UV Energy.

The Bio-Wall is equipped with a monitoring display built into the ballast box which includes a digital visual hour accumulator, monitoring LED’s and “Lamp Out” alarms. Dry contacts allow for building automation integration.

The number and length (lamps up to 60” long) of Bio-Wall’s will depend on the size of the duct, the velocity of the air moving within the duct, the specific contaminants to be treated and the desired % kill of the contaminants.



UV Bio-wall unit shown with access door opened and kill switch by-passed (for illustration purposes only)

## UV BIO-WALL SENSOR ACCESSORY

Sanuvox continues to innovate with a patent pending UV sensor which is capable of monitoring UV output for each individual UV Lamp in real-time, guaranteeing the UV output of any lamp will never fall below a predetermined level.

The UV sensor is ideal for those sensitive applications that must guarantee a specific UV dosage and takes into account: ballast failure, lamp failure, lamp aging, lamp cooling and lamp fouling in real time operating conditions.

### FEATURES

- Designed to work with the Sanuvox UV Bio-Wall
- Easy cuff-style installation
- Individual Sensors (5 per UV fixture) are shielded from the airstream
- Specifically designed sensors to filter out all but UVC (254 nm) wavelength
- Control LCD Panel monitors each individual UV Lamp in real-time
- Dry contacts allows for building automation integration
- Audible alarm sounds should the UV output of any lamp fall below the predetermined setting
- Aluminum construction and UV resistant cable set
- The only UV monitoring system of its kind. A must for those applications that require a specific UV dosage guarantee.



Sanuvox offers at no-charge a Bio-Wall Real-time sizing and Kill Rate Report. Provide Sanuvox with the duct size and CFM, and Sanuvox will provide a detailed report, including calculations and actual Kill Rates for a cross-section of bacteria, viruses and spores. If there is a particular bio-contaminant specified, our engineers will provide the Report using those bio-contaminants. This service is available for the UV Bio-Wall and Quattro Systems.

Detailed technical specifications available at [www.sanuvox.com](http://www.sanuvox.com)

# COMMERCIAL UV COIL-CLEAN

The patented Sanuvox Coil-Clean purifiers are designed to prevent and destroy mold and other microbial contaminants from rooftop coils, fan coils, walk-in A/C coils and the air. High-Intensity 19 mm Quartz UVC (254 nm) Lamps and High-Output Electronic Ballasts paired with Anodized Aluminum Parabolic Reflectors make the Coil-Clean Series incredibly effective. Anodized Aluminum Parabolic Reflectors are able to direct virtually all the UV energy onto the coil or the air.

In addition to maximizing UV intensity, the Parabolic Reflector also protects plastics and wiring from destructive UV rays. How powerful would a flashlight or headlight be without a parabolic reflector? UV Light is no different. Reflection is necessary in order to direct the UVC energy where it is required. Using any other UV Lamp/Emitter will result in losing more than half the UV intensity produced by the Lamp/Emitter.



## LED Status Display

Each CoilClean IL system includes an LED Status Display incorporated into each Ballast Box. The 3 color LED notifies the end-user of the status of the UV system and when the UV Lamp needs to be replaced.

## Dry Contact

Each UV CoilClean IL Ballast Box includes a Dry Contact (NO & NC). The dry contact makes it possible for the CoilClean IL to be easily integrated into building automation systems.



## UV Lamp Boot

Each UV CoilClean system includes a UV Lamp Boot which seals the connection protecting the UV Lamp contacts from humidity and moisture.

Also available with a NEMA 4X weatherproof enclosure for outdoor applications.

## FEATURES

- Destroys mold and other microbial growth on the "Object" as well as biological odors
- Improves energy savings and reduces maintenance by keeping the coil clean
- Available in sizes from 12" to 60" lamp lengths
- High-Intensity 19 mm UVC Quartz Lamp
- Patented Anodized Aluminum Parabolic Reflector reflects and directs UV Energy while protecting plastics from destructive UV rays
- LED Status display incorporated into the Ballast Box monitors system performance including Lamp status and notifies the end-user when it is time to replace the UV Lamp
- Dry Contact is included to allow the UV system to be easily integrated into the building automation system
- UV Lamp Boot seals the connection protecting the UV Lamp contacts from humidity and moisture
- Independently University tested. Results published in the Lancet Medical Journal
- Higher UV intensity and reliability than other UV Lamp/Emitters
- Longer warranty than competing products. 15 year warranty for the Ballast and 2 year warranty for the UV Lamp

## REAL-TIME SIZING KILL RATE

Sanuvox offers at no-charge Real-time Coil Clean sizing and Kill Rates. Provide Sanuvox coil size (L x H) and which side of the coil (upstream or downstream), the distance from the lamp to the coil face and Sanuvox will provide calculations including Real-time Kill Rates based on one of the most difficult molds to deactivate (*Aspergillus niger*).

## COIL-CLEAN STUDIES

In a two year double blind study published in the Lancet Medical Journal sponsored by The Medical Research Council and The National Institute for Occupational Safety and Health (NIOSH), McGill University Researchers found Sanuvox UV Coil-Clean Purifiers to:

- Reduce microbial and endotoxin concentrations by 99%
- Reduce respiratory symptoms by 40%
- Reduce all symptoms by 20%

# STAND ALONE PURIFIERS

## P900-GX PORTABLE

- Eradicates bacteria, viruses and mold
- Destroys chemical and biological odors
- Sanuvox's patented system in a portable UV Air Purifier weighing 11 lbs.
- High Intensity 19 mm UVC/UVV Quartz Lamp
- 9 electronically controlled speeds
- Touch-Pad Digital Controls with Count-Down Timer
- Most effective Air Purification System for those who do not have a forced air system or require a portable room unit
- Purify up to 900 square feet
- Easily wall mountable. Integrated stand and handle included
- 3 year warranty on parts including UV Lamp



## S300FX-GX HEPA/UV SYSTEM

- 2" pre-filter and True 2.5" HEPA Filter captures particles down to 0.3  $\mu\text{m}$  in size
- Can be duct mounted as a by-pass or wall mounted as a stand alone purifier
- Eradicates biological contaminants such as mold, bacteria, viruses, germs and allergens
- Destroys chemical and biological odors
- 200 / 300 CFM. 2 speed blower
- Patented 19 mm High-Intensity Quartz UVC/UVV 'J' Lamp (18" arc length)
- Aluminum Reaction Chamber maximizes UV intensity
- High-Output Ballast
- 3 year warranty on parts including UV Lamp



\* Optional mobile model for medical applications.

## PENTA MOBILE ROOM SANITIZER

- Sterilizes air and surfaces in unoccupied areas
- Available in 40" and 60" Lamp lengths
- 2900 microwatts per/cm<sup>2</sup> at 36 inches (40" Lamp Length)
- 5 High Intensity Pure Fused Quartz UVC Lamps
- Anodized Aluminum Parabolic Reflectors intensify and maximize 360° of UV Energy
- Stainless-Steel base with castors
- High-Output Electronic Rapid-Start Ballasts
- Pre-Timer (minutes) and Operation Timer (hours)
- 360° Infrared Motion Detection with automatic shutdown
- Control Panel with Digital Lamp Life Timer, Digital LED Status, "Lamp Out" visual and audible alarm
- Easily transportable
- Aluminum Cover protects Lamps during storage and transport



## SI000FX-GX COMMERCIAL / INDUSTRIAL

- Eradicates biological contaminants such as mold, bacteria, viruses, germs and allergens
- Destroys chemical and biological odors
- Stand-Alone, ducted to multiple rooms, or by-pass installation options
- Two 1" pre-filters and one 4" 95% ASHRAE pleated filter
- Clean Room Option: HEPA filter capturing particles down to 0.3  $\mu\text{m}$ , additional UVC 'J' Lamp & ballast
- 1750 CFM blower. Under filter load, 1000 CFM.
- Patented 30" 19 mm Pure Fused Quartz UVC/UVV 'J' Lamp
- High-Output Ballast
- Optional motor speed control
- Optional VOC kit
- Warranty: Lamp 12,000 HRS, Motor 1 YR, Ballast 3 YRS



## MB500-GX CEILING TILE MOUNT

- Ideal for offices, break-rooms, doctors offices, waiting rooms, schools, day-care, call centers, etc.
- Eradicates biological contaminants such as mold, bacteria, viruses, germs and allergens
- Destroys chemical and biological odors
- In excess of 1000 microwatts per/cm<sup>2</sup> of UV intensity inside UV Reaction Chamber
- Patented 19 mm Pure Fused Quartz UVC/UVV Lamp
- Aluminum Reaction Chamber maximizes UV intensity
- High-Output Ballasts
- Warranty: Lamp 12,000 HRS, Ballast 3 YRS, Motor 1 YR





# APPLICATIONS AND SOLUTIONS



PUBLIC AREAS



MEDICAL  
APPLICATIONS



MUSEUMS



GARBAGE ROOMS



EDUCATIONAL  
FACILITIES



PRODUCE STORAGE



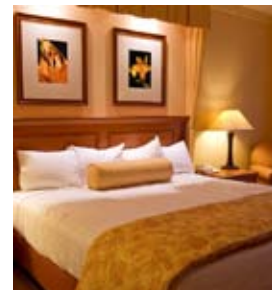
FOOD PROCESSING



OFFICES



CORRECTIONAL  
FACILITIES



HOSPITALITY  
INDUSTRY

## MORE APPLICATIONS AND SOLUTIONS

### The solution for:

- Reduce absenteeism
- Reduce airborne viral and bacterial transmission
- Destroy thousands of troublesome odors

- Reduce HVAC maintenance costs
- Improve energy efficiencies
- Benefit from quick return on investment

### Typical Sanuvox installations:

- Commercial applications
- Municipal and Federal buildings
- Medical and Educational facilities
- Correctional facilities
- Deep sea offshore oil platforms
- Military bases
- Industrial applications

- Food production facilities
- Oceanic research vessels
- Clean rooms
- Hotels
- Airports
- Cruise ships
- Medical research

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products, research, facts, etc ...  
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### SANUVOX TECHNOLOGIES

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