

UV and Air Purification Effectively Contain Airborne Pathogens

By Herb Woerpel
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CHICAGO — As the threat of Ebola, measles, and other infectious diseases continue to make headlines, more and more people are considering the addition of air purification equipment to their homes and buildings. And, based on the innovations on display at this year's AHR Expo, these solutions may be added as affordably as ever.

UV Protection

Representatives at [Fresh-Aire UV](#), a division of Triatomic Environmental Inc., said consumers are turning to UVC because it's been proven to reduce maintenance and energy costs by keeping coils clean.

"UVC is being installed to save money," said Ron Saunders, vice president, Fresh-Aire UV. "Clean coils offer a reduction in pressure drop, lower air-handling speeds, and increased heat transfer. And, UVC lights aimed at cooling coils and drain pans are proven to reduce or negate coil cleaning."

Saunders said Fresh-Aire offers extended life lamps, which grant a service life of two to three years. The company also extends a lifetime unlimited warranty on the power supply and carbon cells, which are used for odor removal.

According to Aaron Engel, vice

president, marketing and communications, Sanuvox Technologies Inc., the HVAC community has embraced two types of UV treatment.

"According to ASHRAE, UV treatment is categorized by its application: in-duct airstream disinfection and air-handler component surface disinfection. Where airstream disinfection uses specially designed UV systems to treat the moving air by maximizing dwell-time between the air and UV light, air-handler disinfection mostly addresses the evaporator coil, maintaining a coil free from mold and bio-film by using UV systems to shine on

the coil," he said. "Contractors have the ability to offer specific UV systems to provide solutions to many issues from improving IAQ to alleviating bio-burden on a coil, which may also negatively impact equipment efficiency.

Sanuvox's Saber PRO Wireless 24-V UV Coil Cleaner was designed specifically as a coil cleaner, treating the coil by maintaining a coil free from contaminants that negatively affect IAQ and equipment efficiency.

"The stand-out feature of the Sanuvox's Saber PRO Wireless is the ability for the contractor to mount the remote LCD display on any wall in the home where the LCD will display real-time system performance,"

said Engel. "This facilitates system monitoring and troubleshooting by allowing the end user to validate real-time UV performance without the need to inspect the system in sometimes difficult areas such as attics or mechanical rooms."

Forrest Fencil, president, UV Resources, said UV-C installations are a simple, effective, and relatively inexpensive means of reducing concentrations of airborne and surface pathogens that lead to such diseases.

"Our clients are increasingly using UV energy to address infection control, especially drug-resistant infectious diseases like MRSA [methicillin-resistant *Staphylococcus aureus*], TB [tuberculosis], Ebola, and the flu," he said. "There are three primary means of applying UV-C systems against infectious agents: upper-air, air-handler unit airstream disinfection, and surface irradiation. One of the most effective strategies is to combine upper-air UV-C units to kill airborne microorganisms along with UV-C lamps installed within HVAC systems to provide supplemental airstream kill ratios and on all plenum surfaces."

Fencil said UV-C is a proven, effective way to reduce airborne infection. "The resurgence of this century-old technology is not a surprise, as there is no way for microbes to develop a resistance to it, and there are no secondary contaminants as a result of its use," he said. "HVAC contractors with health care clients

stand to capitalize on this revival of

UV-C systems as the infection control sector represents a well-funded, yet largely untapped, market.”

UV Resources’ computer-designed GLO Upper Air Germicidal UV Fixture provides a large amount of UV-C energy.

“The GLO fixture can be easily installed anywhere to destroy air-borne virus, bacteria, and mold,” said Fencl. “Frequently used to mitigate the risk of nosocomial infections in health care settings — including surgical suites, emergency room waiting areas, patient rooms, homeless shelters, jails, and prisons — the upper air UV fixture is ideal virtually anywhere there is a threat of infectious diseases. This increase in irradiance levels translates to greater UV-C application coverage and affordability, enabling infection control specialists to effectively treat more area with fewer fixtures, saving both first cost and operational costs.”

UltraViolet Devices Inc. (UVDI) exhibited its V-PAC Photocatalytic Oxidation (PCO) Air Cleaner, which offers an efficient air contaminant and odor-removal system that combines UV-C, titanium dioxide (TiO₂), and carbon filtration.

Richard Hayes, president, UVDI, said UV technology grants customers cleaner, fresher air at an affordable first and maintainable cost.

“UVDI’s products enable building owners and managers to deliver improved IAQ and odor removal to occupants while reducing facility energy consumption and operating costs,” he said. “Today, our technologies can be found in hospitals, airports, museums, casinos, and numerous other places worldwide.”

Field Controls LLC’s multistage air purifier — The Cube — eradicates volatile organic compounds (VOCs), odors, germs, and particulates. The unit includes a MERV-13

high-efficiency filter, a separate carbon filter, and three PRO-Cell™ modules. Each PRO-Cell includes two UVC germicidal lamps and a maintenance-free aluminum grid coated with titanium dioxide. As air passes through the PRO-Cell modules, germs, bacteria, and mold are neutralized by the high-output UVC lamps while VOCs and odors are transformed into harmless, odorless water vapor and carbon dioxide.

The system is ideal for HVAC systems up to 6 ton, where pristine, odor-free air is a requirement.

“The Cube also has multiple configuration options,” said Patrick Holleran, president, Field Controls. “It can be outfitted with an optional post filter to trap targeted gases or with an all-purpose charcoal filter to further control odors in a recirculating system. The Cube is ideal for printing companies, nail and hair salons, invitro fertilization clinics, schools, medical clinics, vet hospitals, fabric stores, and all other applications or work environments where air quality is essential or can be compromised by VOCs.”

Purification through Ionization

Best Living Systems LLC’s multi-cluster ionization (MCI) technology combines a variety of components, including germicidal wavelength UV with ionization, producing a powerful enhanced ion cluster capable of oxidizing VOCs, particulates, and biologicals in the air and on surfaces, said Douglas Hoffman, president, Best Living Systems LLC.

“This results in an ongoing sanitization process that keeps the air clean and pure,” he said.

The company’s BLS HVAC probe is designed to improve IAQ by dealing with pollutants in a proactive way. The probe is placed in the duct system in both the return and supply plenums to provide aggres-

sive ionized oxidizers and multi-cluster ions that are then distributed throughout the home or office. It is best to place a BLS standard probe in the return plenum with an MCI probe in the supply plenum.

“Passive technology would be like a filter — kind of like a mouse trap where you wait for the mouse to get to the trap,” said Hoffman. “Proactive technology would be like having a cat attack the mouse. Our MCI technology is much more proactive than passive.

“Not everyone runs their air conditioning 24/7 or has a two-stage system. Rather than relying on the air conditioning system itself to purify the air, we’re considering using something that’s both in the system and as a stand-alone unit.”

Plasma Air Intl.’s Plasma BAR is a bipolar ionization-based air-purification system that produces a balanced quantity of positive and negative ions. The ions are delivered to the space through the duct system where they interact with pollutants on a molecular level.

The product’s patented needlepoint ion technology does not require ion tube replacement. The long, narrow design allows for installation in air-handling units instead of hard-to-access units mounted on ductwork, providing high-efficiency output while occupying minimal space.

“The needlepoint creates the ions. You can scale our products up to meet cfm demands, as necessary. The BAR comes in a maximum length of 8 feet and can treat up to 20,000 cfm. If you have a 50,000-cfm unit, you’ll need three bars,” said Larry Sunshine, vice president of sales, Plasma Air.

Contracting Benefits


UVC technology offers numerous benefits for the contractor including reducing the HVAC

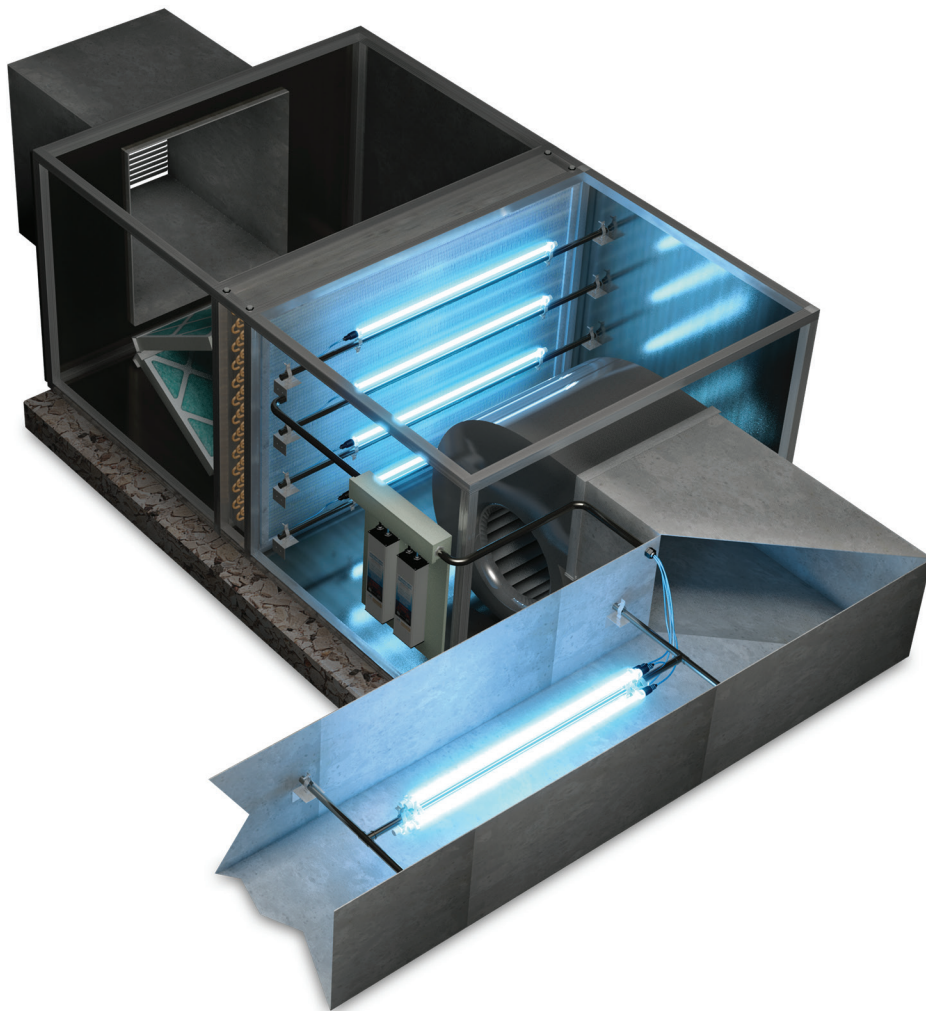
department man hours, said Engel.

He also added that UV systems are very low maintenance, as well.

“The maintenance carries an incredibly low price tag, especially compared to semi-annual coil cleaning prices, which may cost more than a full installation,” he said. “And, because the replacement lamp changeout is so spread out, the investment provides 24/7 coil cleaning, as opposed to only once or twice a year. It’s a no-brainer for any HVAC maintenance department — unless they like cleaning coils.”

Ionization products also require minimal maintenance, which is a great benefit for contractors and facility owners, said Sunshine.

“The tube-style ion generators, which are used in high-level pollutant applications, should be replaced every year or two at the most, but the needlepoint products really require no maintenance,” said Sunshine. “Design-build contractors looking to make the design and purchasing decision, this is a home run for them. It’ll reduce their tonnage, which helps to save on efficiency. For service contractors, this product solves odor, bacterial, and mold issues. For a residential contractor, they can offer homeowners a solution to eliminate most airborne diseases for just a few hundred dollars. It just makes sense.” 



Fresh-Aire’s Tubular Rack System is adjustable, offering flexible installation with a multi-voltage, water-resistant power supply. The unit is delivered to be built on-site for endless size combinations and is designed to kill mold, bacteria, and viruses in the HVAC system.