



The Second Coming of Regional Standards?

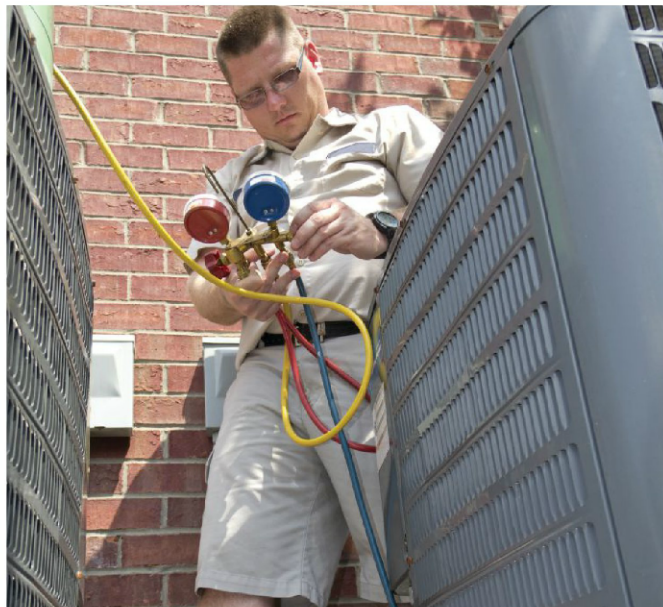
BY JEN ROBY
THE NEWS STAFF

A working group comprised of more than a dozen stakeholders, including energy-efficiency advocates, HVACR industry organizations, and equipment manufacturers, recently reached an agreement on new energy-efficiency standards for residential air conditioners and heat pumps in the U.S. The Central Air Conditioners and Heat Pumps Working Group submitted its recommendations to the Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) on Jan. 19. ASRAC approved the term sheet, and the U.S. Department of Energy (DOE) is expected to use the recommendations in its direct final rule (DFR) later this year.

About 60 percent of U.S. households have a central cooling system, and approximately 19 percent of those systems are heat pumps. And, according to an Appliance Standards Awareness Project (ASAP) press release, virtually all new homes are built with central air conditioning.

"The energy and bill savings from the recommended new central a/c and heat pump standards will really add up for consumers and the nation," said Andrew deLaski,

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SIGNIFICANT SAVINGS: A stakeholder working group suggests new air conditioner and heat pump efficiency standards could save approximately \$38 billion in bill savings and 300 billion kilowatt-hours over 30 years.

FYI

HVAC BRIEFS

COMMERCIAL CONTRACTORS

Mueller Associates (Baltimore) is celebrating its 50th anniversary in 2016. The **John W. Danforth Co.** (Tonawanda, New York) funded a \$50,000 Reilly Family Memorial Scholarship in conjunction with the **Mechanical Contracting Education & Research Foundation** (MCERF). The award will be dispersed in \$5,000 increments over a 10-year period.

MANUFACTURERS

Haier America Inc. (Wayne, New Jersey) named **Chris Hogan** senior sales manager. Hogan most recently served as vice president of appliances with **Sharp Electronics Corp.** (Osaka, Japan).



Bitzer (Sindelfingen, Germany) inaugurated a new international training center in Rottenburg-Ergenzingen, Germany. The training centre is named in honor of long-standing owner **Senator h. c. Peter Schaeffler**, who recently passed away. **NexRev LLC** (Plano, Texas) announced the creation of its NexRev MX regional Latin American headquarters in Mexico City.

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ASHRAE Validates Effectiveness of UV-C

Study reports UV-C inactivates microorganisms with a kill ratio of 90 percent or higher

BY NICK KOSTORA
THE NEWS STAFF

Ultraviolet (UV) light has been growing as part of the HVAC landscape for years, specifically within the IAQ arena. As the technology has evolved, organizations and associations have strived to prove its effectiveness through research and a series of studies.

One such organization, ASHRAE,

recently weighed in on the benefits of UV light by "recognizing the health benefits of UV-C as demonstrated by several studies. The technology is a potentially beneficial option that building owners should consider installing."

VALIDATION PROCLAMATION

"For contractors, the recent ASHRAE research will dispel any doubts about the

ability of Ultraviolet Germicidal Irradiation (UVGI) to improve IAQ, boost HVAC airflow, and maximize heat-exchange efficiency," said Dan Jones, president of UV Resources. "Time and again, research has confirmed the effectiveness of UV-C technology to restore, and thereafter maintain, original cooling capacity."

Jones anticipates this new ASHRAE research will lead even more contractors

and facility managers to incorporate UV-C into their applications.

Chris Willette, president of Fresh-Aire UV, a Triatomic Environmental Inc. company, said germicidal UV light has come a long way from its beginnings as a little-known disinfection technology that could be used in HVAC applications.

"Since 2008, ASHRAE has included

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Contractors Turn to IAQ for Smart, Safe Solutions

Various IAQ products are solving problems, both commercially and residentially

BY NICK KOSTORA
THE NEWS STAFF

Now, more than ever before, contractors are turning to IAQ products to solve complex problems involving air purification, filtration, disinfection, and sterilization.

Whether it's through the use of UV light, whole-home IAQ solutions, or commercial-grade air-filtration equipment, the following case studies showcase ways contractors have solved IAQ problems at both the residential and commercial levels.

THE WELCOME SIGHT OF UV

In Tarpon Springs, Florida, St. Luke's Cataract & Laser Institute recently installed UV surface disinfection equipment to supplement daily manual sterilization in two operating rooms (ORs) in the Villages, one of its seven central Florida clinics.

Trinity UVC Lighting LLC installed UV lamps in three rooftop HVAC systems to supply the 9,600-square-foot building with clean air devoid of allergens, mold, and any other biological contaminants.

"As far as I know, we're one of the few eye care surgery com-

panies in Florida using UV disinfection to this degree," said Donald Bislick, facilities and information technology manager, St. Luke's.

Trinity UVC Lighting specified and installed 390-microwatt (μ W) lamp systems manufactured by Fresh-Aire UV. Surface disinfection system size and time exposure must be precisely calculated to assure total biological deactivation. Brian Stacy, vice president of sales, Trinity UVC Lighting, references published data from organizations such as the CDC to calculate the micro-wattage required to irradiate any known biological contaminant, such as clostridium difficile (C.Diff) or methicillin-resistant staphylococcus aureus (MRSA).

Stacy's calculations allow for the worst-case scenario and also specify a 200 percent protocol above recommendations, because all UV lamps slowly lose UV intensity over their expected one-year life cycle. He also slightly oversizes a system to ensure even the most resilient microorganisms are irradiated.

"A static system such as this ensures the same disinfection time every day, whereas portable UV robots require qualified employees to program, position, and

monitor them properly during use for efficacy," Stacy said.

The clinic's 900- and 1,200-square-foot eye surgery rooms each have four 32-inch-long, stainless steel, ceiling-mounted, ozone-free UV lamp fixtures positioned in the center of the rooms. Timers activate the lamps for off-hours disinfection. Since UV-C wavelengths can be harmful to eyes and skin, Trinity UVC Lighting has built in UV-monitoring entry-door interlock sensors and motion-detection safety measures that can prevent accidental activation during occupancy times. Systems also allow manual operation by authorized personnel with timed shut-offs after proper disinfection time. Trinity UVC Lighting will soon install eight 32-inch and 46-inch UV-C lamps in the Villages' three York® air handlers, manufactured by Johnson Controls Inc.

The air handlers in the Surgery Center total 7,100 cfm and are supplied chilled water from The Villages' community central plant. Trinity UVC Lighting designs, custom-builds, and installs UV systems using Fresh-Aire UV power supplies, lamps, and other components engineered specifically for disinfecting an HVAC system's airstream, evaporator coil, and interior surfaces.

The Tarpon Springs location's initial 60-day UV system trial in one HVAC unit produced such impressive results of eliminating biological growth on a coil that J. Bradley Houser, St. Luke's administrator, approved UV systems for the building's other seven HVAC systems.

"Their attention to detail and understanding of disinfection makes UV technology an easy sell," said Stacy.

REDUCING INDOOR ODORS

In a scientific and research laboratory, environmental control is crucial to maintaining testing integrity and ensuring staff comfort and safety. This was the case for Vantari Genetics, based in Irvine, California. Vantari is an advanced clinical laboratory specializing in helping individu-



AN EYE FOR UV: A look inside the surgery room at St. Luke's Cataract & Laser Institute in Tarpon Springs, Florida.



FEELING BLUE: Both residentially and commercially, UV light is being used to combat germs, bacteria, viruses, mold, and fungi.

als and physicians anticipate drug interactions while analyzing the risk of inherited diseases and cancer. While cheek swabs are sufficient for some forms of testing, urinalysis is also a valuable tool employed by Vantari researchers and technicians in evaluating drug metabolism and other issues.

At Vantari's Irvine facility, pungent urine odors originating in the urinalysis work areas were invading the company's offices and work areas. The company contacted IQAir to help design and implement a source-control solution that would vent the urine odors outside the building. A team of IQAir commercial solu-

tions field specialists conducted a site assessment to determine potential solutions. The IQAir team worked with Vantari CEO Nick Arroyo and the company's facilities manager to design a custom solution.

The initial approach was to fabricate an acrylic hood that would be placed above the urinalysis workstations and would vent odors directly outside. However, city officials would not permit the laboratory to ventilate the captured air to the outdoors. This prompted Vantari and the IQAir team to focus on air filtration instead of ventilation.

The IQAir team identified the

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IQAir GCX AM as an appropriate air-filtration technology for the urinalysis work areas. The GCX AM is a commercial-grade air purifier with gas and odor filtration, specifically configured for control of ammonia and ammonia-based odors associated with urine. The gas and odor cartridges in each GCX AM contain 22 pounds of granular-impregnated activated carbon made from bituminous coal. In addition, the GCX features particle filtration with an H11 IQAir HyperHEPA pre-filter that removes a minimum of 99 percent of all particles in the air that passes through the system, and 95 percent of all ultrafine particles down to 0.003 microns in diameter.

The GCX also features IQAir's New Edition fan, capable of extracting up to 370 cubic feet per minute from each work area and drawing the air up into the 7-foot-long customized acrylic hood. The air then passes through IQAir FlexVac tubing and into the four GCX AM filtration systems.

To control odors in the other areas throughout the Vantari facility, an additional 10 IQAir GC AM systems were strategically placed in offices and open areas. These systems, slightly smaller than the GCX systems, remove any lingering odors not captured by the hood and air-filtration system in the urinalysis work area.

As a result, the IQAir systems have removed any significant urine odors from the environment. The GCX AM systems pull air up from the urinalysis workstations, and the powerful activated carbon filter cartridges have reduced urine odors to the level at which they are undetectable.

"The IQAir systems have worked wonders," Arroyo said. "Now, most people can't even tell we are in the urine toxicology business because of the lack of smell."

HEALTHY HOME SYSTEM

Residing in Ellerbe, North Carolina, a 1,000-resident farm town located 75 miles east of Charlotte, Willa Spivey, her husband Andy, and their two dogs live in a 2,800-square-foot ranch situated in the state's Sandhills, a coastal plain region notorious for its ragweed, chenopods, and pollens.

Built in the 1980s, the home presents unique condensation challenges in that it's half brick and half framed. The kitchen

area prominently features pine and reclaimed wood floors, and the adjacent leg of the structure's L-shaped layout encompasses brick flooring and is built on a pad rather than a foundation.

"We live in an older rambler home that's completely surrounded by pine trees," said Willa Spivey. "Every morning, regardless of the season, I'd wake up with a stuffy nose. There's a lot of pollen in the air, as this area is well known for its poor air quality."

Andy Spivey felt his dogs and their constant shedding were to blame for the family's allergic outbreaks.

"These dogs are the best, most loyal, and lovable dogs I've ever had," said Andy Spivey. "But, they shed a lot. I feared they were bringing in a lot of dust and contributing to our allergies, so we kept them outdoors a lot more than we would have liked to."

The Healthy Home System, a whole-home IAQ solution from Field Controls LLC, improves air quality by treating the entire home as a system, improving the efficiency and cleanliness of the air-handling system itself, and constantly monitoring and managing the airflow in the home for maximum benefit.

The system features four components: a controller, ventilation, filtration, and purification.

At the Spiveys', two Fresh Air Dampers were tied into the return via flex duct. The dampers automatically power open when the system requires fresh air, and, as outside air enters the return, it's filtered, purified, and tempered before entering the home.

The system's Media Air Cleaner™ traps particles as small as 1.0 micron — including pollen, dust, and dander — creating fresh, clean, and pure air.

Providing yet another layer of purification is the system's UV-Aire® product. Available in portable or in-duct configurations, UV-Aire neutralizes and reduces airborne germs, bacteria, viruses, mold, and fungi; eliminates mold growth on air conditioning coils; and prolongs the life and efficiency of the equipment.

All components are managed through an intelligent control that monitors central fan activity and engages the fan on a regular schedule to keep air that is fresh, clean, and pure circulating throughout the entire home, even when the system's neither heating nor cooling. The Healthy Home System Control is set by the contractor and works independently of the thermostat, providing consistent operation.

"The Spiveys have two heat pumps, so we installed two

Healthy Home Systems at their residence," said Tim Begoske, Midwest regional sales manager, Field Controls. "Both featured a MERV-11 particulate capture, a media air filter, a germicidal lamp on the evaporators, and fresh air dampers. The Spiveys are receiving fresh, clean, and pure air 24/7, 365 days a year,"

said Begoske.

"As air passes through the particulate capture, it removes the pollen, the dust, and any threat of airborne mold," he said. "People fail to understand air is coming in, whether you like it or not. With this system, we clean, condition, and purify the air before it ever enters the home." ■

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ASHRAE

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ultraviolet germicidal irradiation, or UVGI, in its handbooks and awareness within the engineering community has resulted in a growing demand for UV in virtually every stage of construction,” said Willette. “This includes medical, commercial, residential, and retrofit applications. In time, this technology may even become standard in new construction. In the same way every home or building requires a filter, each one will require a UV system to complement filtration. Although energy is relatively cheap right now, these low prices won’t last, and buildings in the future will need to be even more effi-

already proven its value, as its growth and expansion began years ago.

Meredith Stines, president of American Ultraviolet, said the need for UV-C germicidal lamps will increase every year as more people understand their effectiveness.

Scott Russell, president and co-founder, Ultravation Inc., said UV has grown steadily over the last 15 years.

“In general, the public is far less skeptical [of UV technology]. It’s found in a wide array of consumer products, not just for air purification or surface sanitization in the HVAC equipment,” he said. “As more installations are performed in the medical field, as well as areas such as assisted living and uni-

sity systems that fight airborne infectious diseases, and ceiling-mounted lights that irradiate unoccupied rooms,” said Willette.

“The adoption of UV-C technology will grow exponentially as facility managers look to

increase in the coming years.”

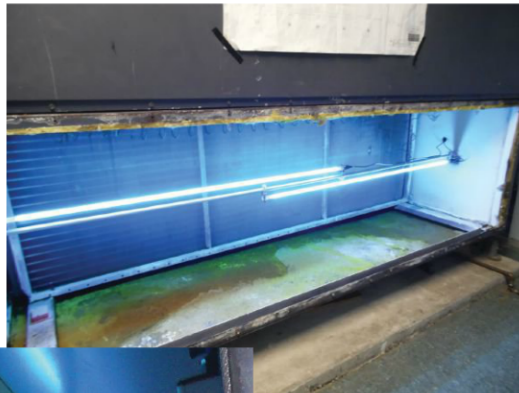
While the general public is only slowly becoming aware of UV light for HVAC applications, Russell added that Ultravation is seeing a proliferation of UV-C technology in such

often still a major hurdle that manufacturers have to overcome, but strides are being made, and health benefits are often discovered as a result of looking for the economic benefit.

“Many building owners first come to UVGI for the obvious economic advantages it gives them with mold suppression compared to conventional coil cleaning,” said Willette. “Once introduced to the technology, they become aware of the improved IAQ; sterilization of bacteria, viruses, and allergens; and neutralization of volatile organic compound [VOCs] that UV systems offer.”

According to Jones, commercial contractors were early adopters of UV-C technology because of the scale of potential energy savings, but now residential contractors are embracing UV-C, as well.

“In particular, residential contractors have realized that there is a financial benefit to their business in offering UV as an IAQ solution, while, at the same time, increasing their margin on



GENERAL CONSENSUS: Most manufacturers agree the general public is much more aware of UV technology now than they were 10 or 15 years ago.



MULTIPLE BENEFITS: Chris Willette, president of Fresh-Aire UV, said that while many building owners turn to UV for economic advantages, they stay with the technology because of its IAQ benefits.

cient. As buildings become better insulated and tighter, maintaining IAQ becomes a higher priority. Bio-fouling of coils, particularly in commercial buildings, robs efficiency. UV technology is a proven and cost-effective solution for both IAQ and mold disinfection.”

THE FUTURE OF UV

ASHRAE validation is certainly a huge step forward for UV, but many manufacturers believe this technology has

universities along with independent testing, there is a clear analysis of the benefits of this technology, not only for maintaining equipment performance, but also for reducing the potential of viable pathogens that may have a negative health effect.”

The medical field is clearly an area where this resource can find room to grow.

“These [applications] include coil-mounted UVGI systems that disinfect surfaces in the air handler, duct-mounted high-inten-

improve efficiency and address IAQ issues, such as the rise of antibiotic-resistant infections in hospitals and schools and new health scares like the recent Legionella outbreak,” said Jones. “UV technology is one of the most reliable and efficient means of keeping indoor air clean and germ-free. Add to this the savings that can be realized with UV-C’s ability to clean and maintain cooling coil energy efficiency, and we would expect UV applications to significantly

things as vacuums, toothbrush sanitizers, small air and water purifiers, etc.

“People are becoming more familiar with the technology,” he said. “However, knowledge of UVGI for HVAC applications has only started to enter the public consciousness. Tens of thousands of UV systems are sold every year, and when a contractor is educated on how to sell UV technology, he is likely to be met with less skepticism than he was just a few years ago.”

GETTING EDUCATED

Educating contractors and the public on UV’s benefits is

each service call,” said Jones.

Stines mentioned that educating the public and contractors is an ongoing process. “Unfortunately, there are a lot of bad UV-C installations and cheaply made UV-C equipment being sold, which gives UV-C a bad name,” he said. “Building owners are aware [of the health benefits], but they also don’t realize the benefits unless you can do a side-by-side comparison of the effectiveness on the coils. The savings take a few years to get a return, but, in the long run, you emerge with a healthier workplace that requires less maintenance.”