

UVR
UV RESOURCES

*UV Solutions
for
All Markets*

Commercial
Emergency
Institutional

Emergency

System energy use starts with overcoming the pressure required to move air through a heat exchanger (Δ delta pressure). The delta requirement is a product of air flow, coil open area and friction. Net open area does not include the area used for coil fins, refrigerant tubing, and the all-important surface build-up of contaminant and mold.

This build-up decreases the open area which will increase coil pressure drop, decrease air flow, and increase energy use (Figure A). If CFM were to remain the same, a proportional increase in velocity would occur (Figure B). This higher interstitial velocity decreases the air-to-surface contact time, which decreases heat transfer and would raise the leaving air temperature. This latent differential of temperature—which is now lower than when clean—combined with reduction in air flow, will increase space temperature and humidity (wet bulb), decreasing the comfort level of building occupants to where system alterations must be performed. Other coil changes include an increase in air friction, insulating effects, and a continual degradation of coil and drain pan surfaces.

A high UV-C energy reflection can be obtained from all grades of aluminum—a phenomena that accentuates UV-C's ability to degrade and rid a coil's surface of contamination (Figure C). There are few organic materials that can escape the destructive effects of UV-C energy.

By looking at a fluorescent lamp (Figure D), you can note the high amount of energy glowing from the lamp's surface, flooding the air and surfaces with direct and reflected rays. This pales in comparison to Xtreme's invisible waveform, which is more than 2.5 times that amount.

UVR products outperform all other products in airborne kill, coil cleanliness and sustained system capacity. They excel at affordability, ease of installation, warranties and total cost of ownership. UVR products have become the number one choice.

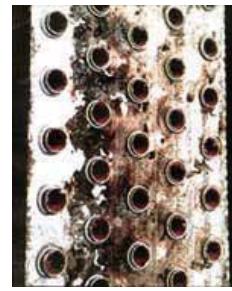


Figure A. Pre-cleaned coil shown cut in half to reveal that it's not actually clean! Instead, the material compacts deeper into it, further reducing air flow and heat transfer. The penetrating power of UV will actually clean all surfaces to restore heat transfer to as new as possible.

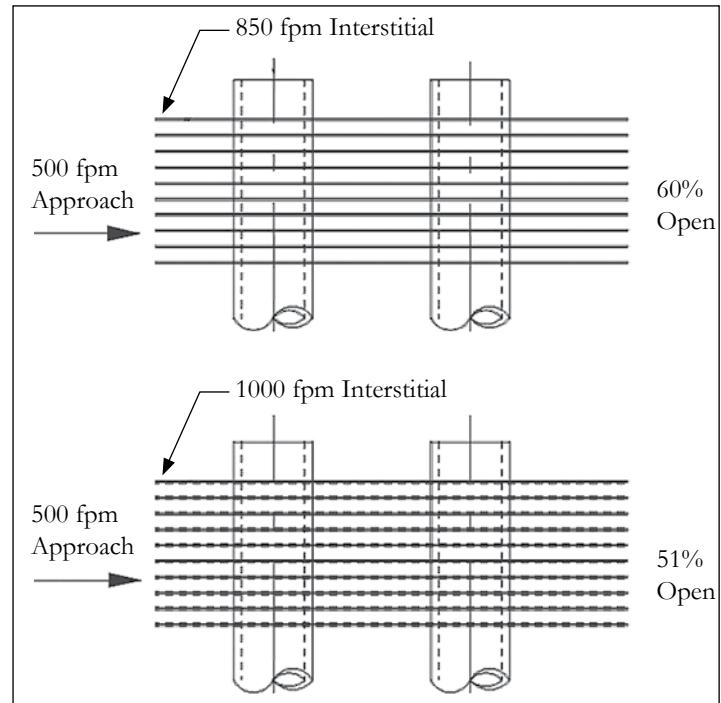


Figure B. A traditional approach velocity of 500 fpm is maintained to show the change in interstitial velocity when open area is decreased by 9% from surface contaminants like mold. With the increase in velocity and thermal insulation, sensible and latent heat transfer is dramatically reduced and space conditions are compromised.

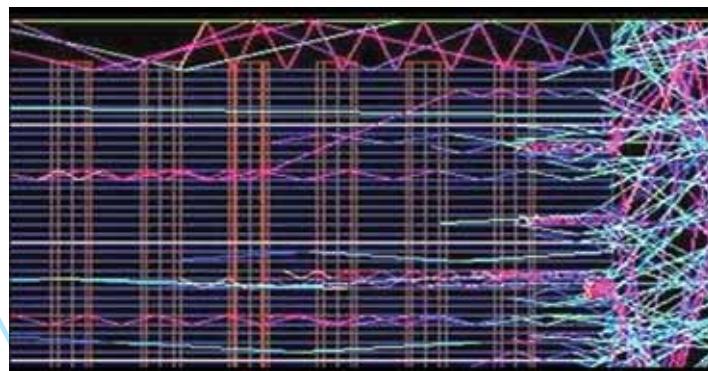


Figure C. Illustration of UV-C spectral lines reflecting off aluminum at angles associated with the entrance angle. At a minimum, aluminum provides a varied, unpredictable and dense fog of reflected radiation throughout. Coil surfaces yield “incident” angle reflection patterns from UV-C's 1/4 micron (0.25) wavelength—a key to UV-C's ability to continuously void a coil of all collected and agglomerated bio-contaminants.

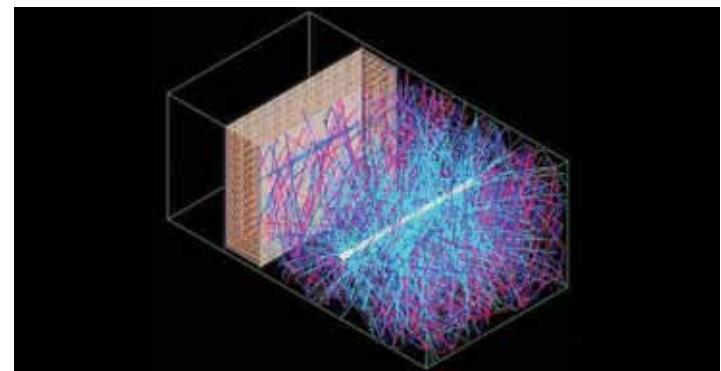


Figure D. Illustrates only a fraction of UV-C flux density and shows the benefit of 360° irradiation (e.g. RLM Xtreme). Filling the cavity plus bathing the coil proves the potential of significantly improved airborne kill ratios. The benefits are obvious when compared to the absorption of photons by fixtures and reflectors, which decreases the potential for the death of airborne infectious agents. 360° irradiation is the obvious choice.

RLM Xtreme™

It's no longer necessary to use costly, awkward and unsafe metal fixturing that can interfere with plenum access. Xtreme combines premium components in a simple, flexible and affordable kit that easily conforms to most any plenum. Its exclusive EncapsuLamp™ (FEP lamp coating) technology protects the system, space and installer from lamp residues such as glass and mercury should accidental lamp breakage occur. Whether for coil irradiation, or, killing airborne infectious pathogens, or both, Xtreme delivers flexibility, long warranties and service life—all at the lowest cost of ownership possible. Choose the choice of major OEM's and retrofit contractors—*RLM Xtreme!*

Product Key Features:

- Specifically designed for Xtreme environments
- RLM Xtreme output: $>420 \mu\text{W}/\text{cm}^2$ at 1 Meter
- 360° distribution – highest UV-C fluence available
- EncapsuLamp™ Technology for superior safety
- 5 year warranty



Applications:

- Healthcare
- Commercial
- Food Production
- Education
- Government
- Hospitality



DEF™ High Output & Standard Output

The DEF is the most common type of UV-C fixture in the HVAC industry. Its self-contained housing provides everything needed to utilize the benefits of UV-C in several HVAC applications. It's available in standard output (SO) and high output (HO) styles to meet most specifications. Both styles can be used to irradiate coils and other plenum surfaces to eliminate mold, mold products and odors. They provide air disinfection of microbes such as mycobacterium tuberculosis (TB), colds and flu and other infectious pathogens. The waterproof ballast, Plug-and-Play fixture connections (one to another) and long warranty sets it apart from the competition. Along with an included installation kit, the DEF has everything needed to put to work anywhere.

Product Key Features:

- Meets all "Fixture" specifications
- Fixture-to-Fixture Plug-n-Play
- Waterproof Ballasts
- 3 year fixture warranty



Applications:

- Healthcare
- Commercial
- Food Production
- Education
- Government
- Hospitality



X-Plus™

The X-Plus combines maximum UV-C performance in an affordable NEMA 4X rated fixture for difficult applications. X-Plus easily installs on the exterior of Air Handling units or ducts, outdoors or in, with only the lamp projecting into the airstream. There's no need for access to the system's interior to install or provide lamp service. X-Plus includes excellent safety features such as a lockable-entry and a power-off system allowing it to be used in areas of unauthorized access like schools, universities, military sites, etc. With lamp lengths from 17" to 60", X-Plus is easily applied to almost any rooftop, through-the-wall, split or packaged system up to 30 tons.

Product Key Features:

- NEMA 4X construction for use anywhere
- Simple installation, operation & service
- LampClamp™ provides no-tools re-lamping
- Complete safety with 2-step power lockout
- 3 year fixture warranty



Applications:

- Healthcare
- Commercial
- Food Production
- Education
- Government
- Hospitality



RLM S/S™

The RLM S/S (small system) provides the same flexibility and affordability of the popular RLM Xtreme, but for smaller HVAC systems, such as fan coils, heat pumps, and PTACs- all of which are documented sources of mold, bacteria, odors, and clogged drain pans. Common applications include hotels, mini-marts, hospitals, and schools — the S/S Series of lamp lengths of 12", 17", 22" and 33" provide the perfect solution to maximize the benefits of UV-C in these and other small equipment applications. The S/S Series comes with an installation kit and its lamps are available with EncapsuLamp technology.

Product Key Features:

- Solves coil/pan cleaning issues
- Fast and easy installation
- Multiple lamp lengths
- EncapsuLamp™ Technology option
- 5 year fixture warranty



Applications - small systems in:

- Healthcare
- Hospitality
- Commercial
- Education



STINGER™

The 24V Stinger was developed for under-serviced and hard-to-access systems such as fan coil units, heat pumps, unit ventilators, terminal units, and individual duct runs, etc. It installs on the exterior of equipment so there is no need to open the system for installation, or, to change its lamp. Stinger is ideal for critical areas too. It is used in units above ceilings, such as hospitals and hotels, or, in specialty applications, industrial and pharmaceutical plants—anywhere UV-C is needed in smaller areas.

Product Key Features:

- 24 Volt operation for safety
- Ideal for <5-ton systems
- Powerful Quad UV-C Lamp
- Reflector focuses UV-C toward coil



Stinger seen thru register

Applications:

- Healthcare
- Hospitality
- Education
- Commercial

GLO™ Upper Air Fixture

Upper air UV systems, since the 1940s, have been and remain an effective tool in reducing the risk of airborne disease transmission. The GLO exceeds the performance guidelines established by the U.S. Department of Health and Human Services and the Center for Disease Control and Prevention (CDC) for hospital and healthcare applications. GLO is used to mitigate nosocomial infections, colds and flu, etc. in healthcare settings, including waiting and patient rooms, homeless shelters, jails and prisons, virtually, anywhere where there is a threat of airborne infectious pathogens.

Product Key Features:

- Kills airborne microorganisms
- Highest coverage area with less power
- Highest UV-C fluence available
- Improves Indoor Air Quality
- Easiest to size, specify, source, purchase & service

Applications:

- Healthcare
- Corrections
- Food Production
- Childcare
- Shelters
- Veterinary



HORNET™

The 24V Hornet brings UV-C energy used for infectious disease applications at healthcare facilities into today's residential and light commercial applications. The Hornet keeps HVAC systems and the air we breathe clean. It efficiently destroys surface and airborne microbes that grow in, and circulate throughout A/C systems which impede coil efficiency, clog drain pans, and become major contributors to allergies.

Product Key Features:

- Easiest Residential Product to Install
- Cleans coil and drain pan
- Improves Indoor Air Quality

Applications:

- Residential
- Light Commercial



CONTROLS & ACCESSORIES



The UV-Com™ is a continuous current-monitoring device that also acts as a power on/off indicator. It provides a local direct-readout green LED that relates the on/off state of an installed UV-C lamp and corresponding ballast. Long-desired by both consulting engineers and facility engineers, the UV-Com additionally provides a remote signal to monitor and confirm the proper operation of every UV-C lamp and ballast in a facility.



The UVReport™ UV-C is the first affordable, multi-functional UV monitor available for UV-C lamp installations in HVAC systems. It features an exclusive resettable timer to display lamp run-time hours and it monitors UV lamp performance from initial installation to lamp change-out. In addition to the digital display, UVReport also provides green, yellow and red LED indicator lights to alert operators of go / no-go lamp status. The digital readout displays the percentage of "initial" lamp output or lamp run-time by toggling a button.



UV Resources provides a number of interlock safety switches for access doors and panels per ASHRAE's recommendations. These devices can be used in combination with toggle switches to ensure UV-C lamps shut-off when opening access points. Switches are 120-277Vac and are UL listed.



Viewport/Access doors allow for safe visual inspection of UV-C systems while they are running. The glass used in the viewport has been tested and certified to prevent the harmful UV-C rays from penetrating through the glass and causing harm to the observer.



Per ASHRAE guidelines, warning labels are provided with every UV Resources fixture. In addition, UVR offers an 8" x 12" plastic warning sign to be located prominently where people access the systems.

UV-C, when specified into new buildings and retrofits, reduces infectious agents, occupant absenteeism and mechanical system maintenance. UV-C qualifies for LEED points in the energy and stainability category and is recognized in many green-building standards for being chemical free. Accordingly, UV installations are becoming more commonplace and it is a rapidly growing application.

The recognition of UV-C's role in creating sustainable quality indoor environments and green buildings prompted ASHRAE to add a chapter on UV-C to the 2011 ASHRAE HVAC Systems Equipment Handbook. The ability of UV-C to preclude, or correct, operation and equipment issues in building AC systems led ASHRAE to form Technical Committee 2.9, Ultraviolet Air and Surface Treatment. Efforts, such as these, help to promote widespread application of UV-C in building systems around the world.

Fueled by a growing demand, today's UV-C systems need to offer application-flexibility, quick and accurate sizing and easy installation, all at an attractive cost of ownership. UV Resources (UVR) leads the way. When compared to other product offerings in the marketplace, the benefits of UVR's family of UV-C products, designed for HVACR applications, comes out ahead every time.

UVR is constantly improving on existing products and tools while providing new and innovative solutions for UV-C equipment and controls.

About UV Resources

UV Resources (UVR) is built around brand names, long warranties, and affordable pricing. The company specializes in simplifying the correct sizing and application of UV-C equipment in HVACR systems so that everyone can benefit from UV-C's intrinsic worth. UVR team members pride themselves on the company's highly rated service, which leads the industry in customer satisfaction.

In addition to developing new and unique UV-C products for specific applications, UVR team members were among the first to develop modern sizing and efficacy software for air conveyance systems and have assisted various OEMs in developing their own. The team has participated in all aspects of ASHRAE's efforts to educate its members worldwide about UV-C energy by giving oral presentations and developing written materials. UVR team members sit on related Committees and also lecture* for ASHRAE on UV-C. They consult with, and are involved in, government or government-sponsored UV-related entities as well.

It is UVR's intent to show engineers and users alike just how simple and affordable the many benefits of UV-C energy can be. The team's significant experience in UV-C development, education, and application in a wide variety of settings provides value that engineers, building owners, plant managers, and others can all count on for many years to come.

*ASHRAE's Distinguished Lecturer program



Corporate Office
P.O. Box 800370
Santa Clarita, CA 91380-0370
Phone 877.884.4822
Fax 877.794.1294
Website www.UVResources.com

REPRESENTED BY:

The UVR website contains tools that let you select, specify, and/or purchase complete UV-C systems. You'll also find valuable content that will help simplify installation, operation, and maintenance of UV-C systems. For more information, go to www.uvresources.com