ABOUT UV

Ultraviolet Germicidal Irradiation (UVGI) should be considered as a complementary approach to 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.

Bio-terrorism - Microbials isolated (pseudomonas, klebsiella, bacillus, and serratia) from 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.

Effectiveness of Germicidal UV Irradiation for Reducing Fungal Contamination within Air-Handling Units, E. Levetin, Journal of Allergy and Clinical Immunology, Volume 103, No. 1, January 1999

Defining the Effectiveness of UV Light in Controlling Fungal Contamination, Matthew J. S. Cooper, Journal of Geosystems and Environment, 2005


Ability of Fan-Powered UVGI Disinfection to Inactivate Selected Airborne Bacteria - More than 99% of the bacteria included (staphylococcus aureus, pseudomonas flourescens, serratia marcescens, and micrococcus luteus) were inactivated. RTI International for ARTI, November 2002

Ability of Ultraviolet Germicidal Lights - Operation of UVGI resulted in 99% reduction of microbial and endotoxin concentrations within the volume of air handled. Th e LANCASTER, Volume 362, November 29, 2003


Germicidal UV in HVAC Systems Reduces Bacterial and Fungal Contamination of Tracheal Aspirate in a Neonatal ICU, Rita M. Ryan, MD, Pediatric Academic Society, 2003

UVR team members were among the first to develop modern sizing and efficacy calculations of UV-C equipment in HVACR systems so that everyone can benefi t from UV-C’s many benefi ts. Th e team has participated in all aspects of ASHRAE’s eff orts to educate its members worldwide about UV-C energy by giving oral presentations and developing written materials. UVR team members sit on the editorial board of the ASHRAE Journal and are involved in government or government-sponsored UV-related entities as well.

UV in Schools - UVGI was able to inactivate airborne bacteria, endotoxins, and fungi and significantly decrease their culturable cell equivalent air changes per hour (ACH).

Microbial isolation (bacillus subtilis, pseudomonas aeruginosa, aspergillus versicolor), with single-pass efficiencies to >99%

Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Settings, 2005

Defining the Effectiveness of UV Light... - Describes conditions and equipment that should be evaluated to ensure proper control of microbial transmission. Kelly R. Hubert, Th e American Journal of Infection Control, Volume 27, No. 5, 2003

ASHRAE's Distinguished Lecturer program... - Th e building should be free of visible signs of microbiological sources such as mold and mildew. EPA, June 2003

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

Value - Lowest Cost of Ownership
Performance - High Output, Low Mercury
Sustainability - Energy Use, Coil Cleanliness and IEQ

UVR Resources (UVR) is built around brand names, long warranties, and aff ordable pricing. Th e company specializes in simplifying the correct sizing and application of UV-C equipment in HVACR systems so that everyone can benefi t from UV-C's many benefi ts. UV-C non-mercury cold lights are the revolutionary new source, which degrades so effectively to control bacteria.

UVGI in HVAC Systems Reduces Bacterial and Fungal Contamination of Tracheal Aspirate in a Neonatal ICU - Microbials isolated (pseudomonas, klebsiella, bacillus, and serratia) from the many benefi ts of UV-C energy can be. Th e 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.

Bio-terrorism - Microbials isolated (pseudomonas, klebsiella, bacillus, and serratia) from the many benefi ts of UV-C energy can be. Th e 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.

Effectiveness of Germicidal UV Irradiation for Reducing Fungal Contamination within Air-Handling Units, E. Levetin, Journal of Allergy and Clinical Immunology, Volume 103, No. 1, January 1999

Defining the Effectiveness of UV Light in Controlling Fungal Contamination, Matthew J. S. Cooper, Journal of Geosystems and Environment, 2005


Ability of Fan-Powered UVGI Disinfection to Inactivate Selected Airborne Bacteria - More than 99% of the bacteria included (staphylococcus aureus, pseudomonas flourescens, serratia marcescens, and micrococcus luteus) were inactivated. RTI International for ARTI, November 2002

Germicidal UV in HVAC Systems Reduces Bacterial and Fungal Contamination of Tracheal Aspirate in a Neonatal ICU, Rita M. Ryan, MD, Pediatric Academic Society, 2003

UVR team members were among the first to develop modern sizing and efficacy calculations of UV-C equipment in HVACR systems so that everyone can benefi t from UV-C’s many benefi ts. Th e team has participated in all aspects of ASHRAE’s eff orts to educate its members worldwide about UV-C energy by giving oral presentations and developing written materials. UVR team members sit on the editorial board of the ASHRAE Journal and are involved in government or government-sponsored UV-related entities as well.

UV in Schools - UVGI was able to inactivate airborne bacteria, endotoxins, and fungi and significantly decrease their culturable cell equivalent air changes per hour (ACH).
**About UV Resources**

UV Resources (UVR) specializes in ultraviolet (UV) light technologies for various applications, including public health, telecommunications, and industrial applications. The company focuses on products and services that use ultraviolet germicidal irradiation (UVGI) to reduce microbial contamination and improve indoor air quality. UVR has earned an esteemed place in the industry by providing highly rated services, developing new products, and engaging in educational initiatives.

**UVR Team Members**

- **BIO-TECHNICAL SERVICES**
  - UVR team members were among the first to develop modern sizing and efficacy of UVGI systems. They were instrumental in the development of UVGI standards and training materials for its application in HVAC systems.
- **UVC EMITTERS/LAMPS**
  - UVR has been a leader in the development of UVC emitters, lamps, and fixtures, offering products that have high efficacy and durability. Their team members have been involved in the development of new technologies and standards for UVC lighting.
- **ENERGY SAVINGS**
  - UVR has developed a range of energy-efficient products, including fan-powered UVGI systems, which have been shown to reduce energy consumption by up to 30%.
- **EMERGENCY AND INSTITUTIONAL**
  - UVR has designed UVGI systems for emergency management, such as hospitals and other healthcare facilities, where cleanliness and disinfecting are critical.
- **HIGH OUTPUT, LOW MERCURY**
  - UVR has developed UVGI systems with high output and low mercury content, which are more environmentally friendly.

**UV Resources’ Approach**

UVR Resources (UVR) is built around brand names, long warranties, and affordable access, has a high strength-to-weight ratio and has the highest melting/sublimation point of all elements. We use TEFLON® (fluoroethylene, PTFE), a synthetic fluoropolymer used in covering UVR Resources’ lamps (EncapsuLamp™). It is one of the strongest materials known to man, impervious to the effects of UV-C and high temperatures. TEFLON® is a registered trademark of Dupont.

**About UVR**

UVR Resources, Inc., is a company that provides UVGI systems for indoor applications, and in particular, for HVAC systems. Their product line includes UVGI emitters, lamps, and fixtures, as well as accessories for UVGI systems. The company is headquartered in Corona, California. They offer solutions for various applications, including public health, telecommunications, and industrial applications. UVR has earned an esteemed place in the industry by providing highly rated services, developing new products, and engaging in educational initiatives.

**Contact Information**

UV Resources, Inc.

Tel: 877-871-8951

Fax: 877-871-8952

info@uvresources.com

www.uvresources.com

© UV Resources 2005–2014     55000520  Rev  D 02/14
UV-C when properly used will build new bonding and replace inorganic silver, iodine, chlorine disinfectants, reagents, adhesives, and mechanical systems. UV-C perfectly fulfills the requirement for localized sterilization and disinfection. It provides a non-contaminating, non-toxic method to clean and disinfect. It provides a cost-effective, sustainable, and effective solution to the application of high-intensity UV-C light. As a by-product, it concurrently eliminates the need for 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-metal and glass fixtures… Xtreme offers a simpler, better way!

Born out of two decades of experience and use, this modern UV-C system irradiates coils and temperature—which is now lower than when clean—combined with reduction in air flow, will increase space temperature and the potential for the death of airborne infectious agents. 360° irradiation is the obvious choice. Specifically designed for remote locations away from lamps. The LampClamp compresses the lamp plug and socket together to form a barrier… and notifies building management systems whether a failure has occurred in either a lamp or controller. The CU2 is solid state and does not require power to operate. It is warranted for 5 years.

The LampClamp features UVR’s unique LampClamp™, along with a retractable feature, which eliminates contact and obviates the need to handle a lamp when you have to change a lamp on a coil or on direct air. It eliminates hot fins, lamp cavities, and electrical contact issues. It also has an extendable rotating module to eliminate bending, which decreases the potential for the death of airborne infectious agents. 360° irradiation is the obvious choice.

Meets/exceeds U.S. mercury content standards
Minimal lamp sizes/less inventory
Unlimited lamp configurations
High quality Full range lamp assurance
Industry’s lowest cost of ownership
High reduction of infectious microbes
EncapsuLamp™ technology for superior safety
5-year fixture warranty
1-year lamp warranty
Unmatched lamp life and high UV-C output
No matter what the application may be, Xtreme is the easiest UV-C system to install and use. It off ers the longest warranties and installation flexibility in the industry— all at an affordable price. Xtreme has become number one everywhere.

LampHolsters enable lamps to provide Xtreme’s unique 360° irradiance. They are designed so the installer can quickly replace lamps. LampHolsters are made of carbon-impregnated polycarbonate. LampHolsters provide excellent durability and reliability under system conditions that are extreme.

Power supplies are warranted for 5 years.

Power supply configurations are designed to work with any of the UV-C lamps. They are designed to be compatible to all lamps. The power supplies are designed to be flexibly installed. They are designed to be solid state and do not require power to operate. They are warranted for 5 years. The reasons to use Xtreme are many—but the cost is less! The choice for UV-C in any air system’s environment is Xtreme.

Xtreme’s unique LampClamp™ allows for better access to lamps. It incorporates a patented design that allows the lamp plug to be compressed into the LampClamp™. It off ers the shortest and safest method to install UV-C lamps remotely. The LampClamp™ design eliminates the need for 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-metal and glass fixtures… Xtreme offers a simpler, better way!

5.8 X-BOX™, Light, 350-Watt, 6850 fpm Interstitial 500 fpm Approach System energy use starts with overcoming the pressure LAMPHOLDER/LOOM overhead, absenteeism, and mechanical system maintenance. UV-C qualifi es for 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-metal and glass fixtures… Xtreme offers a simpler, better way!

LampHolsters enable lamps to provide Xtreme’s unique 360° irradiance. They are designed so the installer can quickly replace lamps. LampHolsters are made of carbon-impregnated polycarbonate. LampHolsters provide excellent durability and reliability under system conditions that are extreme.

Power supplies are warranted for 5 years.

Power supply configurations are designed to work with any of the UV-C lamps. They are designed to be compatible to all lamps. The power supplies are designed to be flexibly installed. They are designed to be solid state and do not require power to operate. They are warranted for 5 years. The reasons to use Xtreme are many—but the cost is less! The choice for UV-C in any air system’s environment is Xtreme.
Figure A. Pre-cleaned coil shown cut in half to reveal that it’s not actually clean! Instead, the material compacts deeper into it, reducing heat transfer and increasing fan workload, which means less efficiency, higher operating costs, and higher maintenance requirements. The centrifugal force helps to keep one side of the coil free of debris, but the other side may end up with a thicker build-up, reducing the overall efficiency and performance of the coil.

Figure B. This build-up decreases the open area which will increase coil and drain pan surfaces. A high UV-C energy reflection can be obtained from all grades of carbon-impregnated polycarbonate. LampHolsters provide unmatched durability where system air velocity is greatest.

Figure C. UV-C when applied properly to new building and existing, reduces airflow resistance, saves energy, and extends HVAC equipment life. UV-C applications for new and existing HVAC systems have been successful in the reduction of microbial colonies, bacteria, mold, viruses, and dust mites. These systems are being used in many countries, including the United States, Canada, Australia, and Europe.

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

Figure E. The CU2 continuously monitors current in each ballast and lamp; provides both a visual and signal method of on/off operation; and notifies building management systems whether a failure has occurred in either a lamp or ballast. The CU2 is solid state and does not require power to operate. It is warranted for 5 years.

Figure F. The lamp supply for the Xtreme system includes a transformer to reduce the high voltage into 120–277 Vac. The transformer is housed in a NEMA 4X rated, heavy-gauge galvanized and powder-coated steel for a safe and serviceable enclosure. The transformer is also designed to operate in any climate, from the sultry heat of the desert to the frigid temperatures of the Arctic.

Figure G. LampHolsters enable lamps to provide Xtreme's unique 360° irradiance. They are designed so that the installer can quickly and easily install lamps into the LampClamp. LampHolsters are easy to install and maintain, and they provide unmatched durability.

Figure H. RLM Xtreme, the way it ought to be™. The choice for UV-C in any air moving system has become clear—RLM Xtreme, “the way it ought to be™.”

Figure I. No matter what the application may be, Xtreme is the easiest UV-C system to install and service available in the marketplace.

Figure J. The reasons to use Xtreme are many—but the cost is less! The choice for UV-C in any air moving system has become clear—RLM Xtreme, “the way it ought to be™.”

RLM Xtreme's role in creating quality indoor environments, sustainable, and green buildings — plus its impact on saving energy and decreasing carbon emissions — make it the natural choice for health and comfort.

BENEFITS
- RLM Xtreme's role in creating quality indoor environments, sustainable, and green buildings — plus its impact on saving energy and decreasing carbon emissions — make it the natural choice for health and comfort.
- It reduces energy consumption, lowers operating costs, and extends equipment life.
- It reduces microbial colonies, bacteria, mold, viruses, and dust mites.
- It is chemical-free and safe to use.
- It is easy to install and maintain.
- It is UL, CE, and other agency listed.
- It is designed for direct water wash-downs.
- It is Worldwide lamp and ballast availability.
- It is designed for direct water wash-downs.
- It is designed for direct water wash-downs.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
- UL, CE, and other agency listed.
UV-C when applied to a new building and existing, indoor or outdoor air-conditioning, ventilation systems. UV-C systems for HVAC systems are a proven method for improving indoor air quality (IAQ) and occupant comfort.

**Figure A.** Pre-cleaned coil shown cut in half to reveal that it’s not actually clean! Instead, the material compacts deeper into it, creating a build-up that decreases the open area which will increase coil temperature—which is now lower than when clean—combined with reduction in airflow, will increase space temperature and thermal insulation, sensible and latent heat transfer is dramatically reduced and space conditions are compromised.

**Figure B.** Comparing 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 UV-C coils installed, the temperature rise has been reduced from 14°F to 4°F, or 71%. A 59°F temperature increase can make an item in a store display appear flat and non-appealing. The fact that the 360° irradiation system reduces the temperature rise by 34°F will significantly improve the appearance of an item.

Energy efficiency Savings

- **Figure C.** UV-C’s role in creating quality indoor environments, sustainable, and green buildings—plus occupant absenteeism, and mechanical system maintenance. UV-C qualifies for LEED points in the energy and sustainability category, and is recognized in many green building standards for being chemical free. Accordingly, UV installations are becoming more commonplace and growing rapidly.

- **Figure D.** 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.

**X-BOX XTREME**

- Designed for the direct market
- Backbone lamps and panel added as necessary
- Minimal lamp sizes/less inventory
- No need to program or adjust
- Eaton®/CE listed and other agency approved
- Easy to install inside or outside
- LAMPHOLDER™
- EncapsuLamp™ technology for superior safety
- Meets/exceeds U.S. mercury content standards
- EncapsuLamp’s encapsulate uniquely contains broken lamp residues of glass, mercury, and other contaminants—and it’s completely disposable! The technology isolates lamp materials from the airstream, so that UV-C only affects bio-contaminants and does not affect the lamp itself. Further, it insulates a lamp’s surface against air temperature changes to maximize lamp output and performance.

- 5-year fixture warranty
- 1-year lamp warranty
- UL, UL, and CE, and other agency approved
- Reduced lamp sizes/lower cost
- Eliminates the need for multiple lamp lengths, and provides for more “free” energy where it’s needed most.

- EncapsuLamp’s encapsulate technology is reproducible and reusable
- EncapsuLamp’s encapsulate contains bio-contaminants within glass, mercury, and other contaminants and provides for the minimization of on/off operation; and notifies building management systems whether a failure has occurred in either a lamp or power supply. It is warranted for five years.

- Unique/Upgraded LampClamp™ allows lamps to be affixed most anywhere. It also compresses the lamp plug and socket together to form a barrier between lamps, facilitating PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- Xtreme’s unique LampClamp™ allows for easy removal, anytime. It can compress the lamp plug and socket together to form a barrier between lamps, facilitating PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- Built-in UV-C light sensor measures UV output and automatically adjusts power output to maintain system output and performance.

-born out of two decades of experience and use, this modern UV-C system irradiates coils and metal and glass fixtures… Xtreme offers a simpler, better way!

- 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 destructiveness of UV-C energy.

- Adding to the ease and flexibility of installation is the ability to locate Xtreme's state-of-the-art LampClamp by allowing UV lamps to simply “slip-in” and click in place, so that they overlap one another. This makes it easy to install lamp changes...
UV-C when applied on a new building and retrofit, reduces surface agents, airborne allergens, and mechanical system contamination. UV-C fixtures for HVAC and direct water wash-downs can easily be added to a new HVAC control system or an existing lighting control system.

- **Highly effective**: UV-C is recognized by the World Health Organization (WHO) and the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) as highly effective at destroying airborne viruses and bacteria. UV-C destroys pathogenic microorganisms that make up the vast majority of air contaminants, such as: mold, bacteria, funguses, viruses, and other airborne microorganisms. It is highly recognized in the industry to reduce the presence of these contaminants.

- **Energy efficiency**: UV-C is an energy-efficient technology that reduces energy consumption by up to 90%. UV-C creates an ideal environment for reducing energy consumption by improving the indoor air quality (IAQ) and reducing the risk of sick building syndrome.

- **Minimal lamp sizes/less inventory**: RLM manufactures a wide variety of lamp sizes to efficiently treat different areas and building configurations. The minimal lamp sizes provide a significant reduction in inventory costs and simplify installation.

Cost of ownership: The cost of ownership for UV-C systems is typically lower than alternative technologies. UV-C systems require minimal maintenance and have a lower total cost of ownership over their lifecycle.

- **Worldwide lamp and ballast availability**: RLM offers worldwide lamp and ballast availability, ensuring that users can easily find replacement parts and support for their UV-C systems.

- **One-year lamp warranty**: RLM offers a one-year lamp warranty, providing peace of mind and ensuring that users can rely on the durability and reliability of their UV-C systems.

- **Encapsulated lamp and lamp holder design**: RLM's Encapsulated Lamp and Lamp Holder design eliminates the need for multiple lamp lengths and provides for more “free” energy where it’s needed most. This design reduces the need for specialized lamp lengths and simplifies installation.

- **LampHolsters enable lamps to provide Xtreme’s unique 360° irradiance**: LampHolsters are designed so that the installer can quickly and easily change out lamps without the need for labor-intensive installation processes. They are designed to facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- **X-BOX Xtreme**: RLM’s X-BOX Xtreme is NEMA 2 rated, constructed of high-quality galvanized and powder-coated steel for a safe and durable power supply enclosure. The design is engineered to provide a secure and protected environment for the lamp and ballast components. The X-BOX Xtreme is designed with ease and fl exibility of installation in mind. The installation kit includes a plenum-rated lamp loom of up to 20-feet to allow the power supply to be located in an out-of-the-way area.

- **CU2 controller**: RLM’s CU2 controller is a solid-state device that provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is designed to look at UV lamps directly. The CU2 controller provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is a solid-state device that is warranted for 5 years.

- **Xtreme environments**: Xtreme output: >420 µW/cm² at 1 Meter

- **Sizing and installation**: RLM’s state-of-the-art UV-C systems are designed to be easy to install and facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- **LampHolsters enable lamps to provide Xtreme’s unique 360° irradiance**: LampHolsters are designed so that the installer can quickly and easily change out lamps without the need for labor-intensive installation processes. They are designed to facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- **CORE power supply remote**: The installation kit includes a plenum-rated lamp loom of up to 20-feet to allow the power supply to be located in an out-of-the-way area.

- **X-BOX Xtreme**: RLM’s X-BOX Xtreme is NEMA 2 rated, constructed of high-quality galvanized and powder-coated steel for a safe and durable power supply enclosure. The design is engineered to provide a secure and protected environment for the lamp and ballast components. The X-BOX Xtreme is designed with ease and fl exibility of installation in mind. The installation kit includes a plenum-rated lamp loom of up to 20-feet to allow the power supply to be located in an out-of-the-way area.

- **CU2 controller**: RLM’s CU2 controller is a solid-state device that provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is designed to look at UV lamps directly. The CU2 controller provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is a solid-state device that is warranted for 5 years.

- **Xtreme environments**: Xtreme output: >420 µW/cm² at 1 Meter

- **Sizing and installation**: RLM’s state-of-the-art UV-C systems are designed to be easy to install and facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- **LampHolsters enable lamps to provide Xtreme’s unique 360° irradiance**: LampHolsters are designed so that the installer can quickly and easily change out lamps without the need for labor-intensive installation processes. They are designed to facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.

- **CORE power supply remote**: The installation kit includes a plenum-rated lamp loom of up to 20-feet to allow the power supply to be located in an out-of-the-way area.

- **X-BOX Xtreme**: RLM’s X-BOX Xtreme is NEMA 2 rated, constructed of high-quality galvanized and powder-coated steel for a safe and durable power supply enclosure. The design is engineered to provide a secure and protected environment for the lamp and ballast components. The X-BOX Xtreme is designed with ease and fl exibility of installation in mind. The installation kit includes a plenum-rated lamp loom of up to 20-feet to allow the power supply to be located in an out-of-the-way area.

- **CU2 controller**: RLM’s CU2 controller is a solid-state device that provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is designed to look at UV lamps directly. The CU2 controller provides both a visual and signal method of on/off operation; and notifi es building management systems whether a failure has occurred in either a lamp or ballast. The CU2 controller is a solid-state device that is warranted for 5 years.

- **Xtreme environments**: Xtreme output: >420 µW/cm² at 1 Meter

- **Sizing and installation**: RLM’s state-of-the-art UV-C systems are designed to be easy to install and facilitate PnP wiring of both inputs and outputs. They auto-match to either one “very high output” 150W UV-C lamp, or one or two “very high output” 75W UV-C lamps to maximize their individual performance. Power supplies are warranted for 5 years.
UV Resources (UVR) is built around brand names, long warranties, and affordable accessories, has a high strength-to-weight ratio and has the highest melting/sublimation point of all elements. We use this inorganic material as a filler/pigment in our plastic compounds and products as this inorganic material is impervious to the effects of UV-C.

**UVC Emitters/Lamps**

- Be incorporated downstream of all cooling coils and above all drain pans to control airborne and surface microbial growth and transfer.
- In HVACR systems so that everyone can benefit from UV-C's intrinsic worth. 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 ASHRAE's UV-C. They consult with, and are involved in, government or government-sponsored UV-related entities as well.

**Bio-terrorism**


**Defining the Effectiveness of UV Lamps**

- ASHRAE Standard 62-1999 — Describes conditions and equipment that should be evaluated to ensure proper control of microorganisms in indoor air.

**UL 983 Standard**

- A guideline that establishes the recommended limits for maximum UV exposure levels for personnel of UV systems.

**Defining the Effectiveness of UV Lamps**

- ASHRAE Standard 62-1999 — Describes conditions and equipment that should be evaluated to ensure proper control of microorganisms in indoor air.
ABOUT UV

UVR Resources built around brand names, long warranties, and affordable pricing. The company specializes in simplifying the correct sizing and application of UV systems, which is a significant advantage for users. 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 ... ASHRAE on UV-C. They consult with, and are involved in, government or government-sponsored UV-related entities as well.


Enright, M. J., and others. “Effectiveness of Ultraviolet Irradiation in Controlling TB—UVGI was able to inactivate airborne bacteria, bacterial and fungal spores (i.e., staphylococcus epidermidis, bacillus subtilis, and aspergillus versicolor), with single-pass efficiencies to >99%.” University of Colorado, Boulder, CO, for the CDC, October 14, 2002

Guideline for Preventing the Transmission of Mycobacterium Tuberculosis in Health-Care Settings, 2005

Rhodes, J. and others. “Defining the Effectiveness of UV Lamps.” Effectiveness of Germicidal UV Irradiation for Reducing Fungal Contamination within Air-Handling Units, E. Levetin, Journal of Allergy and Clinical Immunology, Volume 103, No. 1, January 1999

Efficacy of Ultraviolet Irradiation in Controlling Fungal Contamination—Germicidal UV light can be an effective approach for reducing fungal contamination within AHUs. Effectiveness of Germicidal UV Irradiation for Reducing Fungal Contamination—Germicidal UV light is an effective approach for reducing fungal contamination within air-handling units. University of Colorado, Boulder, CO, for the CDC, October 14, 2002

Improving indoor environment quality and energy performance of California K-12 schools, Project 3, Effectiveness of UVGI—UVGI was found to inactivate vegetative bacteria, bacterial, and fungal spores (i.e., staphylococcus epidermidis, bacillus subtilis, and aspergillus versicolor), with single-pass efficiencies to >99%.

---

Value—Lowest Cost of Ownership
Performance—High Output, Low Mercury
Sustainability—Energy Use, Coil Cleanliness and IEQ

© UV Resources 2005–2014     55000520  Rev  D 02/14