



STERIL-AIRE

UVC and Commercial Buildings

Application Bulletin



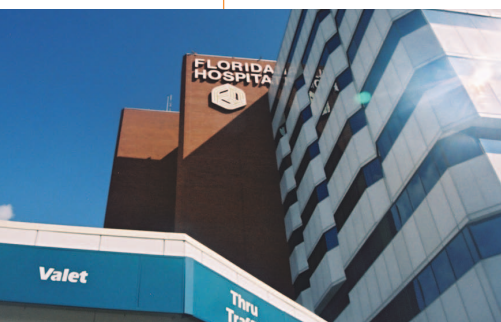
UVC FOR HVAC™: KEEPING BUILDINGS AND BUILDING OCCUPANTS HEALTHY.



Woodland Hills Mall



Medicine Lake Properties



Florida Hospital



American Electric Power

The IAQ Challenge:

The air conditioning (A/C) systems in buildings provide cool, moist gardens for the growth of mold and other microorganisms. These organisms multiply “24/7” to huge concentrations, creating a hidden bio-film of mold deep inside the HVAC system. This bio-film, and the mold spores that travel from the coil through the airstreams, account for many of today’s troublesome “sick building” symptoms and for many of the maintenance and operational problems. At the same time, infectious disease particles can circulate freely through the system, posing additional health threats.

The Solution:

There *is* an effective solution to these problems: multi-patented UVC Emitters™ from Steril-Aire, the company that developed UVC for HVAC. These devices use germicidal ultraviolet-C (“UVC”) energy to eradicate both surface and airborne mold, as well as viruses and bacteria. Installed on the downstream side of the cooling coil, they irradiate high output UVC energy to eliminate surface contaminants and greatly reduce the number of airborne microbes. The products thus enhance IAQ by eliminating mold and associated odors and by preventing the spread of colds, flu and other viral and bacterial infections.

Energy Savings:

Steril-Aire devices also have a proven track record in reducing HVAC energy consumption. The germicidal UVC light continuously cleans coils of mold and organic build-up, bringing them back to peak efficiency. Benefits include better airflow, temperature and humidity control, improved heat transfer, and greater net cooling capacity. Documented energy savings of 20% and higher are common. *(See Cost-Saving Example, opposite page.)*

Maintenance Savings:

By providing safe, continuous cleaning of coils, drain pans, plenums and ducts, UVC reduces or eliminates costly cleaning programs, for thousands of dollars in additional savings. Also, maintenance crews and building occupants are no longer exposed to harmful cleaning chemicals and disinfectants.

By keeping buildings and their occupants healthy, Steril-Aire devices make a vital contribution to IAQ control — potentially reducing complaints and litigation that can result from mold contamination, sick building syndrome (SBS) and building-related illnesses (BRI).

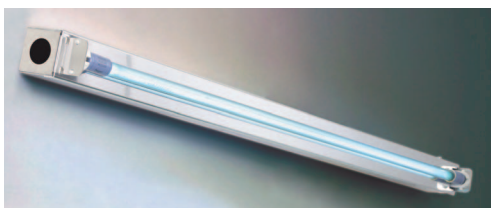
REDUCING ENERGY, MAINTENANCE AND OPERATIONAL COSTS.

Good IAQ need not carry a high price tag. In fact, a Steril-Aire UVC installation actually saves money, as shown in this actual cost-saving example. When you calculate the gain in net cooling capacity, the resulting energy savings, and the added reductions in coil and drain pan maintenance, a typical installation pays for itself in just months. Savings in future years are even more dramatic.

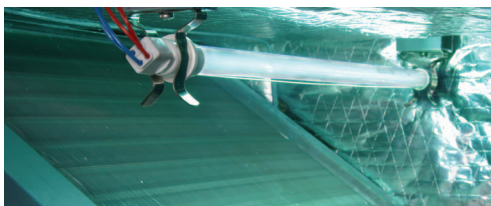
Four-Year Cost-Saving Example

UVC Installation	Before	After		
CFM – measured or selected (VAV)	25,000	28,750		
Entering air temperature – dry bulb °F	80.0	79.0		
Entering air temperature – wet bulb °F	67.0	66.0		
Leaving air temperature – dry bulb °F	55.9	52.4		
Leaving air temperature – web bulb °F	54.6	51.9		
Total cooling capacity – Btuh	1,012,500	1,289,869		
Net cooling capacity gain – Btuh	277,369			
Pressure drop “across coil”	1.25" WG	0.79" WG		
Pressure drop BHP reduction	3.468	EER: 7.0		
Annual operating hours	2,500	Before		
Energy cost per kWh	\$0.08	EER: 8.5		
Annual improvement (kWh cost)	\$8,855	After		
Annual coil & drain pan maintenance	\$4,000			
Total annual improvement	\$12,855			
Installation/operating costs (15 fixtures)	1st Year	2nd Year	3rd Year	4th Year
Fixture & installation labor costs	\$8,700.00			
Annual energy costs	\$785.77	\$785.77	\$785.77	\$785.77
Annual Emitter replacement cost		\$1,275.00	\$1,275.00	\$1,275.00
Total installed & operating cost	\$9,485.77	\$2,060.77	\$2,060.77	\$2,060.77
Annual improvement (less costs)	\$3,369	\$10,794	\$10,794	\$10,794
Estimated return (years)	0.738			
Cumulative improvement	\$3,369	\$14,163	\$24,956	\$35,750

PRODUCTS TO FIT EVERY COMMERCIAL APPLICATION.



UVC Emitters™ There is a Steril-Aire UVC Emitter to fit every air handling system. Double-ended (Model DE) units are designed for internal mounting and end-to-end assembly (standard or Quick-Connect). Single-ended units are installed from the exterior and through the wall of HVAC equipment. Choices include standard (Model SE) or NEMA 4x (Model SEN) fixtures. All models are available in a variety of tube lengths.



UVC Kits UVC kits contain one UVC Emitter and all the necessary components to retrofit difficult-to-access room unit systems with UVC. The space-saving, snap-in design fits all major brands. Specialized kits are available for fan coils (shown), PTAC units and unit ventilators.



SteriWand™ Portable device may be used on table-tops, walls and other surfaces infested with mold, bacteria or viruses. Simply pass the hand-held device closely over the contaminated area, allowing the high output UVC energy to decontaminate surfaces.

STATEMENTS & TESTIMONIALS

A research study in a large office building found that Steril-Aire UVC lights are effective in reducing fungal contamination within air-handling units (AHUs). Air handlers treated with the UVC lights experienced almost 99 percent reductions in both surface and airborne fungal (mold) contaminants compared to identical air handlers that were not treated with UVC. The study concluded that "germicidal UV irradiation may be an effective approach for reducing fungal contamination within AHUs."

— *Dr. Estelle Levetin, University of Tulsa, "Effectiveness of Germicidal UV Irradiation for Reducing Fungal Contamination within Air-Handling Units"*

"Property owners are starting to realize that higher quality mechanical equipment pays for itself in longer service life, reduced maintenance and downtime, and greater energy and operating efficiencies. UVC Emitters are an integral part of this strategy because they help to achieve all of these benefits. Also, by creating a cleaner, fresher-smelling environment and preventing the spread of germs in retail spaces, UVC lights give owners a valuable marketing tool that can be used to attract tenants and shoppers, along with giving them well-deserved peace of mind."

— *Woodland Hills Mall, Tulsa, Oklahoma*

"We're pleased to hear many of our employees commenting on how clean the air is since we've installed the UVC Emitters. We just don't have the odor or contamination problems we used to have. UVC promises to have a sweeping impact on IAQ problems.... Everyone should consider using it!"

— *AEP/Public Service Company of Oklahoma, Tulsa*

"UVC stops mold in a manner that's non-invasive to artwork — unlike many of the cleaning agents that are used to combat the same problems."

— *Museum of Fine Arts, Boston*

"Mold and its odors can pose never-ending problems. Our clients have tried all types of remedies, mostly without success — until adopting UVC Emitters. UVC is providing a way to keep mold continuously in check at its source — in hotels, visitor centers, and other public places — even under the most challenging conditions."

— *ACS Inc. (IAQ consultants), Kailua Kona, Hawaii*

"We have eliminated our four-times-per-year coil cleaning program, and we no longer expose our maintenance people to chemicals required for this task.... By bathing our coils in UVC lights, we've also experienced a big power consumption reduction. We estimate a conservative 28% drop in total A/C system energy usage."

— *American Electric Power, Dallas, Texas*

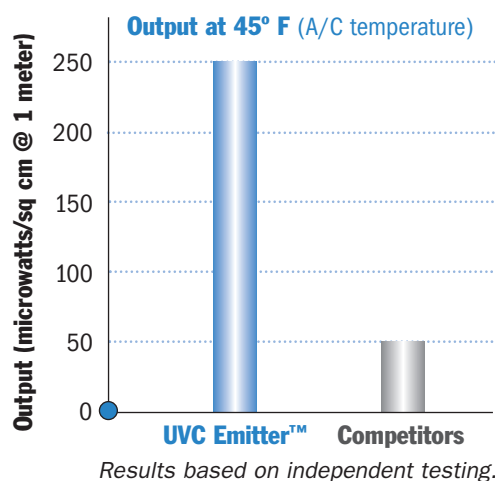
The health aspects associated with the use of this product and its ability to aid in disinfection of environment air have not been investigated by UL.

PERFORMANCE COMPARISON

Steril-Aire devices work better and last longer:

Many UVC products claim to work just like Steril-Aire. But their claims are usually based on tests conducted at 90° F in still air. But in the cold/moving air environment of an A/C system, it's a different story! As the graph shows, the UVC Emitter delivers about five (5) times the output of other UV devices under HVAC conditions.

Why is this important? Both the service life and germicidal effectiveness of UVC devices relate directly to output. So you can count on Steril-Aire to work better and last 3-4 times longer than low-output devices.



These products may be covered by one or more of the following patents, others pending: 5,334,347/ 5,866,076/ 5,817,276/ 6,372,186/ 6,313,470/ 6,245,293/ 6,267,924/ 6,280,686/ 6,423,882/ 6,500,267/ 6,589,476/ 6,627,000

Represented By:



Complies with current U.S. and Canadian safety standards for use in HVAC equipment



Registered to ISO 9001:2000
File No. A13253

STERIL-AIRE®

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