

FRESH-AIRE UV

UV LIGHT DISINFECTION SYSTEMS

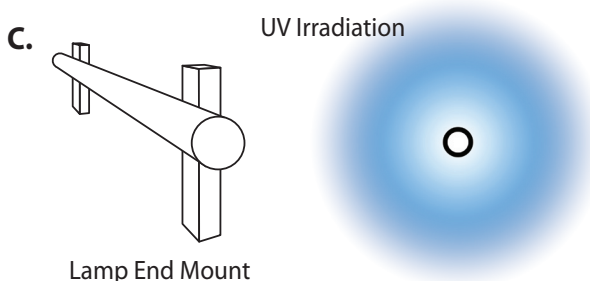
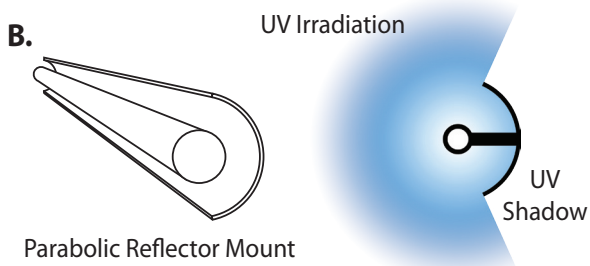
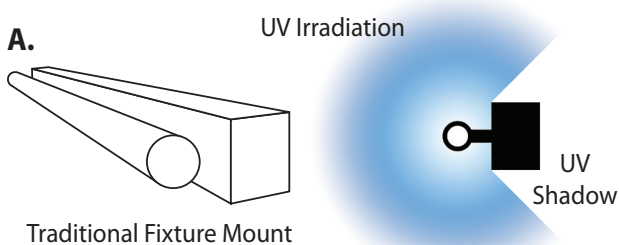
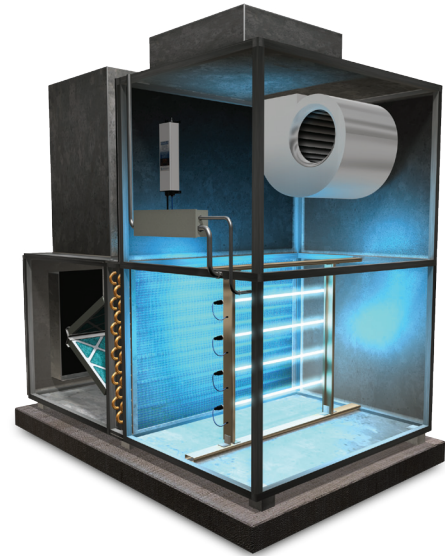
UV-C System Selection for Air Treatment

When selecting a UV systems for air treatment in recirculating air handling systems - it is important to consider the following aspects of the design of the UV System to ensure proper airborne irradiation.

Lamp Placement

For air treatment, the location of the uv lamps within the air handling system is of key importance. The lamps should be placed in an area of the air handling system that allows unobstructed irradiation of the UV such that the UV can come into contact effectively with all of the moving air of the air system.

An ideal location is to place the UV lamps in the downstream section of the cooling coil and before the blower. This area is preferred because this section of the air handling system typically has more room for the location of the lamps within the limitations of the air handler itself. Also it keeps the irradiation of the UV away from materials that may degrade from the UV light such as the air filter. As an added bonus, the UV lamps can provide the ancillary effect of keeping the drain pan and coiling coils free from any biological growth such as mold, algae or slime which often times can grow in this area.



Irradiation Effectiveness

It is also important is to place the lamps in a configuration that will eliminate or minimize the loss of UV irradiation from effects such as UV shadowing. UV shadowing occurs when a UV lamp is placed on a fixture or shield the prevents the UV irradiation from projecting out from the entire circumference of the lamp. In other words, the UV that is created by the lamp is irradiated out 360 degrees around the circumference of the lamp tube itself. If the lamp is placed onto a fixture (A) or reflector (B), then a percentage of the UV radiation is "shadowed" by the support which results in a significant reduction in UV light efficiency. A ideal method of mounting the UV Lamps is to support them with end-mounted brackets (C) which allow full UV light distribution as is shown in the diagram.

Power Supply Output

The power supply for a UV system can be the driving or limiting factor in the overall lamp output capability of the UV lamps themselves. These power supplies can be supplied in two different output threshold types. They are:

1. Standard Output - which drives the UV lamp at a standard current level of 425mA.
2. High Output - which drives the UV lamps at two different current range of 850mA and 1200mA. For air treatment it is suggested to use a power supply that has high output capabilities and is preferable to be in the upper range of 1200mA for optimum air treatment.



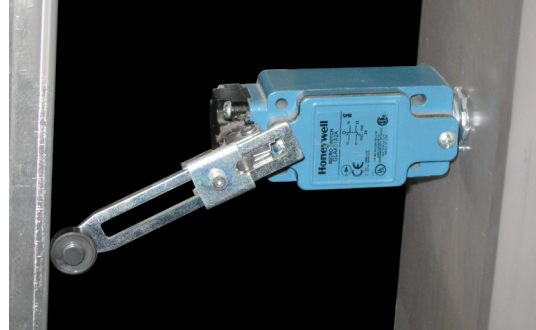
Lamp Design

The design and construction of UV lamps can be another critical limiting factor in the effectiveness of the system. With a high output power supply it is important to select a lamp that is designed for that current load. If the wrong lamp is selected then lamp longevity will suffer.

The best UV lamps are constructed to withstand the cold and wet climate found within the air handling system and incorporate water-resistant lamp connectors. For high output operations, the filament of the lamp should be of more robust construction to handle higher current loads.

Safety considerations

When a high output UV lamp system is installed within an air handling system, it is imperative that proper safety interlock switches are utilized to prevent entry and accidental exposure to the high levels of UV. Exposure to UV light can cause severe eye damage therefore interlocking the entry ways into the areas where the UV light is installed can prevent this.

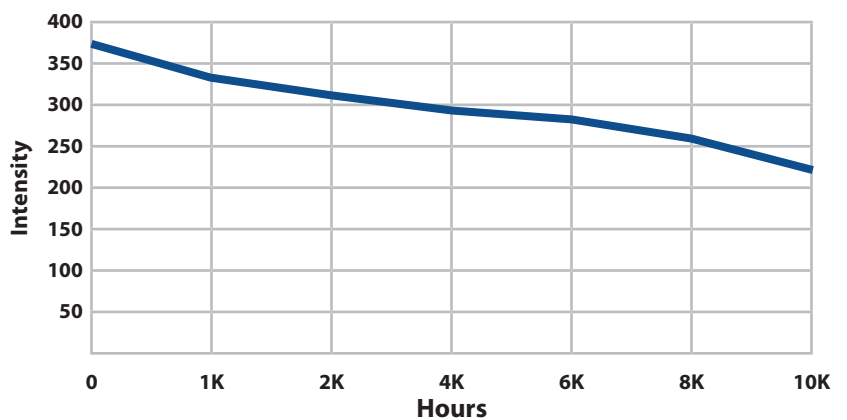


Commercial Grade Interlock Switch

UV Lamp Life

When UV systems are utilized for air treatment, it is important that the UV intensity of the system is closely monitored for the overall output of all the lamps of the entire system. UV lamps have a finite life and the UV intensity will decay over time therefore the total UV output of the system should be monitored and the lamps should be replaced in a timely fashion (presently High output UV lamps are limited to 9000 hours for air treatment). UV lamp output monitors are available for measuring and monitoring the lamp life of the UV system.

TUVCL-100HO Lamp Depreciation



Intensity (Microwatts Output at 1 Meter) 100% = 375mw



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