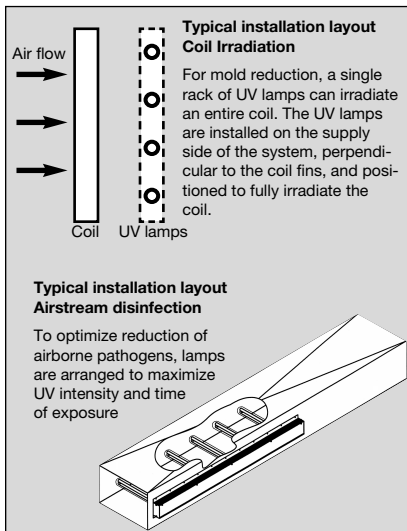


Indoor Air Quality in large Structures



It is well established that in structures where groups of people congregate, and where the air is continually re-circulated, microorganism counts steadily increase—even where filtration is installed (many organisms are small enough to pass through filters). As contamination from inorganic and organic substances have been identified, and building construction techniques have improved, the role of the heating and ventilation system has become increasingly important in providing not just temperature controlled air, but “quality”, healthful air.

HVAC's Unintended Role

An HVAC system itself can facilitate the growth of microorganisms—especially mold, a major allergen—and then distribute the organisms very effectively. The addition of UV will not only counteract these HVAC problems, it will in fact reverse the system's unintended role as distributor of pathogenic microorganisms. UV will transform the system into an effective microorganism *eliminator*, turning it into a *positive* contributor to healthfulness of indoor air. The benefits of properly addressing these IAQ issues can be substantial,

making a significant and even major improvement in the welfare and the productivity of personnel.

A Net Savings in Energy is Possible

A second and very important benefit of applying UV technology in HVAC systems is the performance efficiency gained through the UV treatment of AC coils. Consistent irradiation of the coils with UV prevents biological contamination that increasingly inhibits thermal transfer, and can even cause changes in pressure differentials. A return on investment in UV can be quickly shown when the energy and maintenance savings are considered.

Two goals for UV

Ultravation manufactures UV equipment designed specifically to address the two aspects of UV treatment for HVAC systems: *mold reduction on coils* and *airstream disinfection*. Mold reduction is accomplished with the UVMatrix™-SI Series, that positions UV lamps to evenly and constantly irradiate the coils. Sizing and installation is facilitated and optimized by Ultravation's integrated and fully adjustable rack design (patent pending). Airstream disinfection is maximized through the use of Ultravation's T3™ UV lamp enhancement system that increases disinfection power as much as 40% and more—utilizing *standard* UV



Mold and biological contamination on coils can significantly impact health and increase energy costs

UV can keep a coil clear of mold and other microbiological growth



lamps. The UVMatrix™ AS-Series, further optimizes airstream disinfection by positioning T3™ enhanced “U” shaped UV lamps along a length of the airstream that maximizes both intensity and exposure time.

T3™ UV Optimization

Ultravation T3™ is a UV lamp system that places the UV lamp inside a quartz sleeve that isolates the UV lamp from the direct airstream. This allows the lamp to attain a higher surface temperature, increasing the amount of UV that it can emit. This has far reaching benefits:

- T3™ enables Ultravation equipment to deliver output performance that competes very favorably with the high output or “over-driven” lamps of other designs.
- The efficiency of standard UV lamps saves money due to low power consumption.
- T3™ assemblies are designed to allow UV lamps to be replaced without replacing the entire assembly.
- Standard lamps cost less to replace.
- The combination of T3™ enhancement, high quality ESP™ electronic power supplies that operate at very high frequencies and Philips, low mercury content lamps, give our lamps a two-year life expectancy—twice that of many other standard lamps.
- The Philips lamps in Ultravation equipment are the most ecologically friendly UV lamps made with no lamp containing more than 5mg of mercury—compared to some with as much as 50mg per lamp.

Lowest cost of ownership

Ultravation has taken into consideration every aspect of improving IAQ using ultraviolet light—including product design that maximizes health benefits; that installs quickly and easily; uses contemporary circuit design and components, to achieve performance goals; and takes full advantage of the energy savings potential for an accelerated return on investment. To complete the package, Ultravation actively trains contractors and installers, and assists in properly sizing a UV system so that performance goals are reached at the lowest possible cost of ownership.

Ultravation T3™ lamps are very easy to replace (18000 hour (approx 24 month) replacement schedule recommended). Lamps are sealed inside a quartz sleeve with a pressure fit rubber “O” ring. They easily remove from unit with no system disassembly needed. (Patent pending)

SI-Series shown



Ultravation UVMatrix™ SI-Series UV equipment. An integrated rack and lamp system designed for use in large air handlers



Ultravation UVMatrix™ AS-Series UV equipment designed specifically for air disinfection for use in large air handlers and duct systems

