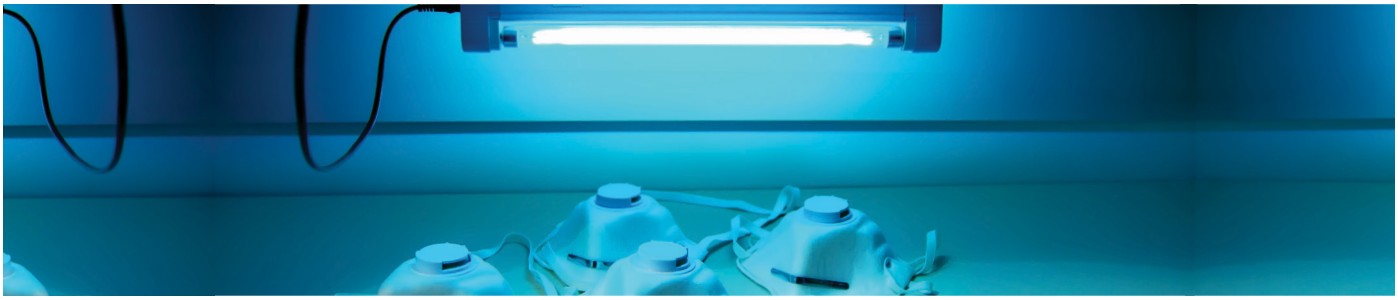
UVC Lighting Option
Versus
Bi-Polar Ionization Option



UV Lights & Lamps: Ultraviolet-C Radiation, Disinfection, and Coronavirus

» UVC radiation is a known disinfectant for water, air, and nonporous surfaces. UVC radiation has been used for decades to reduce the spread of bacteria. For this reason, UVC lamps are often called “germicidal” lamps.

» UVC lamps are available for two (2) different applications:

1. In Unit Surface Disinfection:
    a. This application utilizes standard intensity UV-C lamps located in the HVAC Unit at the cooling coil. They are used to irradiate the coil, filter, condensate drain pan, and other wetted surfaces.
    b. Surface disinfection UVC effectively controls micro-organisms growth and reduces biofilm which reduces coil maintenance, coil air pressure drop, and improves coil heat transfer.
2. In-Unit Airstream Disinfection:
    a. This application utilizes greater amounts of high-intensity UVC lamps. The higher amount of radiation output can be used to irradiate airborne micro-organisms in the airstream.

» Advantages of UVC

1. Proven technology, thoroughly vetted and well-established effectiveness.
2. Endorsed by ASHRAE.
3. Mold, Bacteria, and virus reduction for surface irradiation.

» Disadvantages OF UVC

1. UV-C lights intensity fades over time.
2. High Maintenance costs for lamp replacement.
3. Mold, Bacteria, and virus reduction occur in the HVAC unit only.
4. No benefit for VOC’s or odor.

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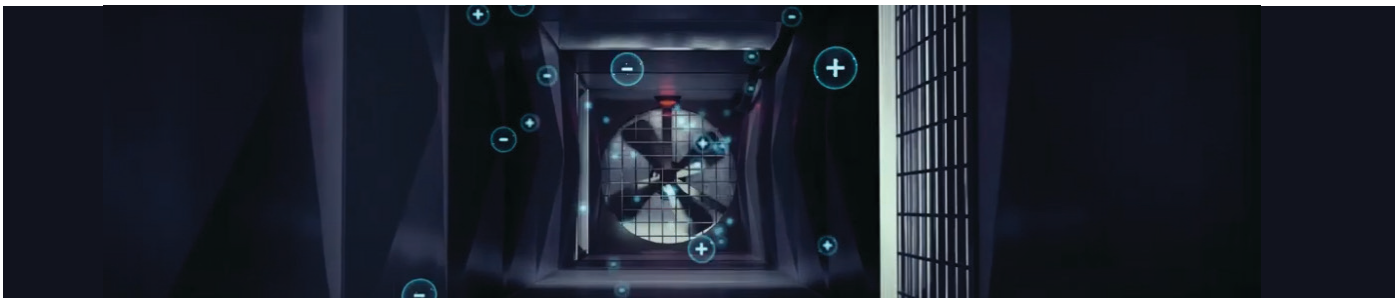
Needlepoint Bipolar Ionization: Disinfection and Coronavirus



» Bipolar Ionization or non-thermal plasma technology has been around for about 10 years. It was originally designed for HVAC Systems to combat the SAR's Virus. The latest Needlepoint Bipolar Ionization (NPBI) solutions have improved the solution's ability to address airborne particulates, pathogens, VOC's, and odors.

» The technology works by using electric voltage to generate positive & negative ions and supply them to occupied space. **Needlepoint Bipolar Ionization works in two ways:**

1. Charged ions come in contact with airborne particulates such as mold, viruses, bacteria, and Volatile Organic Compounds (VOC). As they interact, the charged ions break the particulates down to inactivate them.
2. Charged ions bond with airborne contaminants and agglomerate, forming larger particulate masses that either drop out of the air, or get caught in HVAC filters and removed from the environment.

» Advantages of NPBI

1. Thoroughly vetted Proven technology.
2. Well established effectiveness for SARS Virus.
3. Low or no maintenance based upon technology.
4. Effective for purification of surfaces and the air stream.
5. No ozone byproducts.
6. Does not require periodic replacement parts.
7. Integrates into an existing BMS.
8. Eliminates the need for MERV 13 to 17 level Filteration

» Disadvantages of NPBI

1. Not one size fits all.

WHO IS CM3 BUILDING SOLUTIONS?

CM3 Building Solutions, Inc. provides complete Energy Services, Total Building Solutions, Security, Access Control, Building Analytics, Telephony, Managed IT Services, and Information Security to commercial, industrial, institutional, governmental and other types of facilities.

We are the premier solutions and integration provider serving Eastern Pennsylvania, New Jersey and Delaware, specializing in providing seamless end-user system automation and customer satisfaction.

CM3 consistently provides every customer with the optimum solution to maximize the comfort, safety, and efficiency of their facilities. We **listen** to our customers, we **understand** their challenges, and **we deliver results.**

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