## Needle Point Bipolar Ionization (NPBI) by Global Plasma Solutions (GPS)

This technology is our recommended solution for all types and sizes of air handling units, packaged units, fan coils, and/or split system equipment. It has equal or better performance than UV lights and its impact is realized from the coils into the space and to the where the particles in the airstream are caught in the filters. The attached data sheet explains the application in more detail.

The benefits that GPS state are as follows:

**Particle Reduction** –Blue Heaven Labs, a 3rd party laboratory, tested GPS' NPBI and confirmed that a system using a MERV 8 filter and NPBI will have the same or better particle control than a system using a MERV 13 filter without NPBI. This equates to fan energy savings and filter replacement cost savings.

**Odor Control** – The ions produced by GPS' patented NPBI devices break down gases with electron volt potential numbers below 12. The harmful gases are reduced to compounds or molecules already prevalent in the atmosphere, including oxygen, nitrogen, water vapor and carbon dioxide. The chemical or contaminant in the space reacts with the NPBI field and results in harmless molecules common in the atmosphere. Many applications are now using GPS' NPBI technology instead of carbon filters or potassium permanganate to control odors.

**Pathogen Control** – The ions produced by NPBI are also attracted to pathogens, like ions attaching to and controlling particles. When the ions combine on the surface of a pathogen, they rob the pathogen of the hydrogen necessary for them to survive. During the final step of deactivation, the ions eliminate hydrogen from the pathogen, making the airborne virus, bacteria or mold spore inactive or non-viable. GPS has done substantial testing to confirm the kill rates of various pathogens. Below is a chart that shows the results of testing that has been completed by various 3rd party, independent testing firms.

| Pathogen | Time Exposed | Kill Rate |
|---|---|---|
| E.Coli | 15 Minutes | 99.68% |
| MRSA | 30 Minutes | 96.24% |
| TB | 60 Minutes | 69.01% |
| CDIFF | 30 Minutes | 86.87% |
| Norovirus | 31 Minutes | 93.50% |
| Legionella | 32 Minutes | 99.71% |

**GPS'** NPBI technology is used in many healthcare applications for pathogen and odor control. There is no interference with healthcare imaging equipment that would result in unreliable testing.