

Bipolar Ionizer + MERV 8 Performance Case Study



DISCOVER...

how an IEC fan coil, partnered with the Plasma Air Bipolar Ionizer and MERV 8 filter, creates an efficient and fast solution for cleaner indoor air.

Project: Clean Air Initiative | Products: Bipolar Ionizer + MERV 8 Filter | Location: Office

THE CHALLENGE:

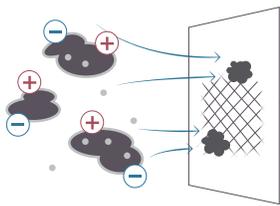
Not all indoor environments such as offices, classrooms, hotel rooms or apartments and condos are equipped to properly circulate cleaner air through the room. Providing clean air is a critical demand for today's building owners, facilities managers, tenants, students and more!

As part of IEC's **Clean Air Initiative**, we sought to create an effective solution to help reduce and neutralize air pollutants.

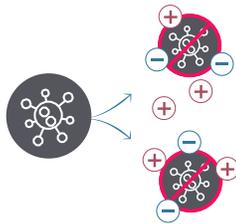
The Bipolar Ionizer, partnered with a MERV 8 filter, creates an effective solution to clean the air more efficiently and faster.

THE SOLUTION:

The Plasma Air 600 series needlepoint brush-type ionizer produces a high concentration of positive and negative ions, delivering them to the space through the air stream. Within the air stream, ions attach to particles, causing the particles to become larger and more easily filtered from the air. When ions encounter pathogens, they disrupt the pathogens' surface proteins, rendering them inactive.



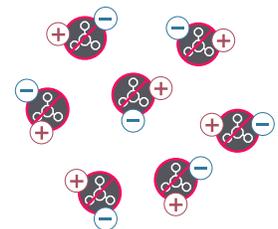
Airborne particles are charged by the ions causing them to cluster and be caught in filters



As they divide to reproduce, bacteria and virus cells bond with oxygen ions and are destroyed/neutralized

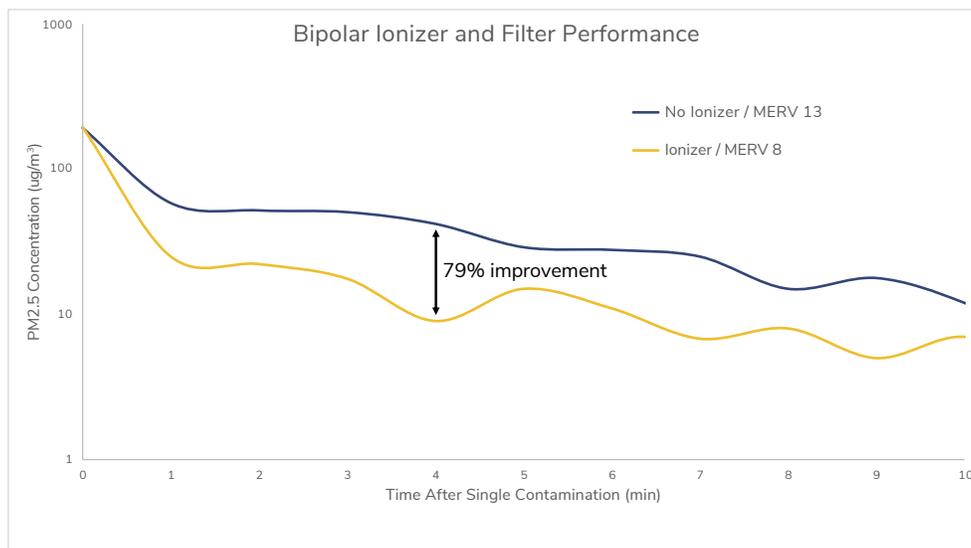


Odorous gases and aerosols oxidize on contact with oxygen ions and are neutralized



Oxygen ions cause a chemical reaction with VOCs breaking down their molecular structure

Figure 1.



Conclusive Results

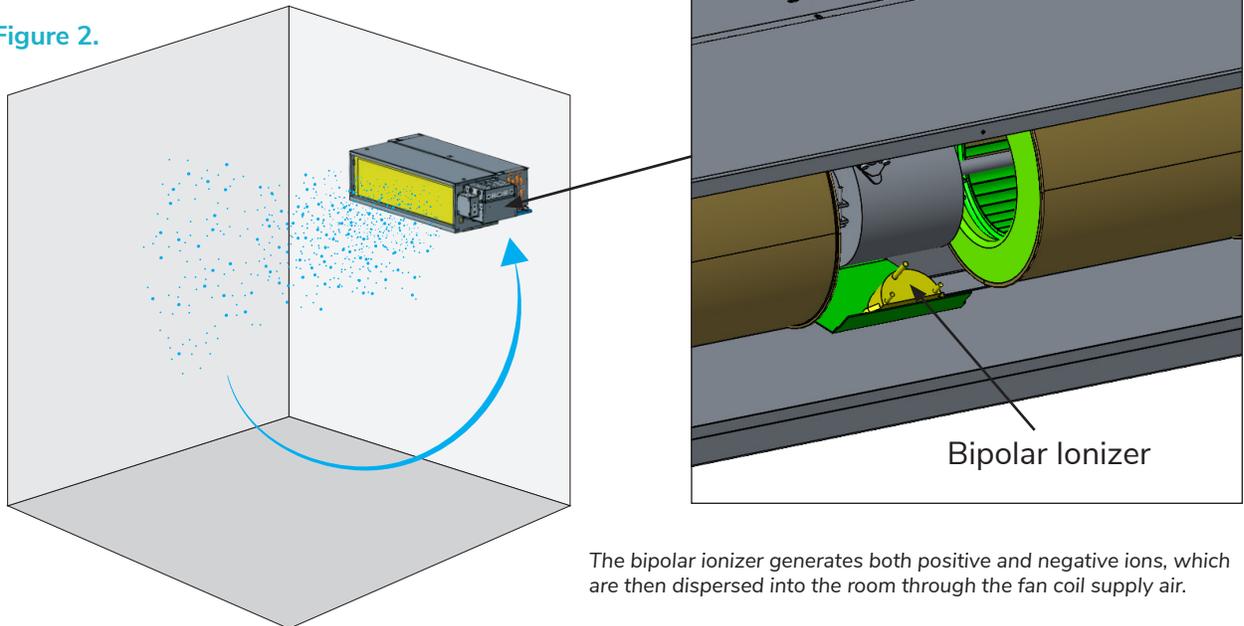
Referencing Figure 1, the results of our tests are conclusive. The bipolar ionizer+ MERV 8 filter, compared to a MERV 13 filter, creates a more efficient and quicker approach to improving indoor air quality. After just 4 minutes, the ionizer+MERV 8 filter provided a 79% improvement (33 ug/m³) in measured air particulates, compared to the MERV 13 filter.

Testing Conditions

To demonstrate this, IEC ran the tests with our Ceiling CXB fan coil unit in a typical 11' x 12' office space (approximately 1050 cubic feet). Using a Digital Environment Pocket Particle AQI particulate meter, we measured the particulate concentration levels (ug/m³) at the following conditions:

1. MERV 13 filter
2. Bipolar Ionizer + MERV 8 filter

Figure 2.



The bipolar ionizer generates both positive and negative ions, which are then dispersed into the room through the fan coil supply air.

During each testing condition, an aerosol was dispersed in the closed office space at the same level of 195 ug/m³. The particulate meter was placed 6ft away from the ceiling unit, 4 feet from the ground with no objects blocking flow of the air to and from the meter.

We tracked the aerosol concentration level in one-minute intervals with the particulate meter. In between each testing condition, we allowed the room to fully return to baseline readings before initiating the subsequent tests in order to create consistent conditions. During testing, the blower ran at continuous speed.

“ I was encouraged to see the reduced particulate count with the MERV 8/Ionizer combination. Before combining the two, we could only achieve concentrations of 3-4 ug/m³ of particulate in the office's air. With the combination, we were able to reduce concentrations as low as 1 ug/m³. ”

– Anthony Testa

To learn more about Plasma Air Bipolar Ionizer, visit iec-okc.com/resources to view the FLYER.