



Your HVAC Guy

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# AIR IONIZATION SYSTEM

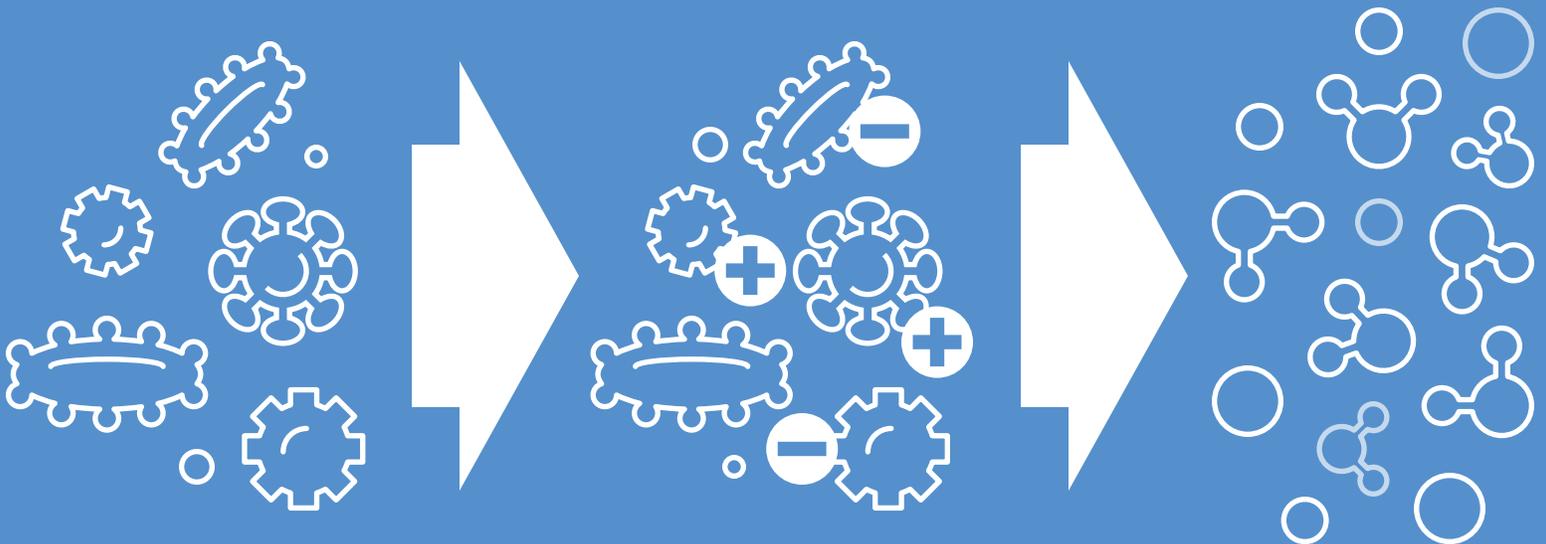
## How the iWave Technology Works

iWave works to safely treat the air inside industrial, commercial and residential buildings. The patented technology uses positive and negative ions to address harmful IAQ issues such as certain bacteria and viruses, VOCs, odors, and particulate. The ions produced travel within the air stream into the occupied spaces, treating the air everywhere the ions travel, even in spaces unseen.

HARMFUL PARTICLES

POSITIVE AND NEGATIVE IONS ADDRESS IAQ CONCERNS

THE IONS ARE A PROVEN PROCESS TO HELP CLEAN THE AIR



# How iWave Addresses SARS-CoV-2 and Human Coronavirus 229E

Shown below is performance data for iWave's NPBI™ technology against SARS-CoV-2 the virus that causes the disease COVID-19, and Human Coronavirus 229E the virus that causes the disease SARS. Both of these performance tests were run using proprietary NPBI technology through independent third party labs.

## SARS-CoV-2 (Covid-19)

<b>TIME IN CHAMBER</b>	<b>30 MINUTES</b>
<b>RATE OF REDUCTION</b>	<b>99.4%</b>

Please note that testing the reduction rate of SARS-Cov-2 and Human Coronavirus 229E with the iWave NPBI product is an evolving process and additional testing is anticipated to be conducted in the future. iWave products are not marketed as, nor cleared by the FDA as a medical device.

3RD Party  
LAB TESTED

## Human Coronavirus 229E

<b>TIME IN CHAMBER</b>	<b>60 MINUTES</b>
<b>RATE OF REDUCTION</b>	<b>90%</b>

Human Coronavirus 229E is not SARS-CoV-2

3RD Party  
LAB TESTED

This test was run using the iWave-C Air Purifier P/N 4900-10 in a test designed to mimic ionization conditions like that of a commercial aircraft's fuselage.

Based on viral titrations, it was determined that at 10 minutes, 84.2% of the virus was inactivated. At 15 minutes, 92.6% of the virus was inactivated, and at 30 minutes, 99.4% of the virus was inactivated.

This test was run in a test chamber in a lab setting with the Nu-Calgon iWave-R Air Purifier P/N 4900-20.

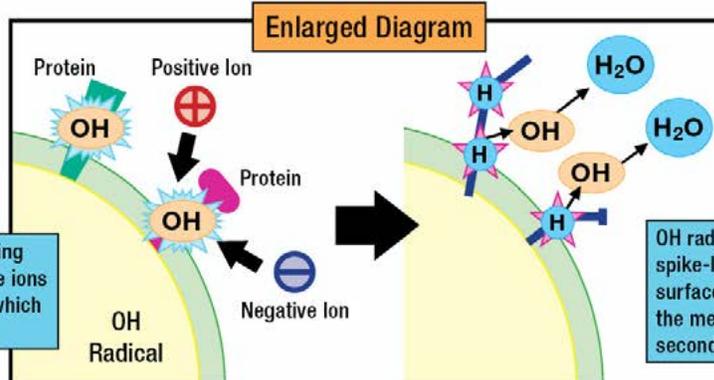
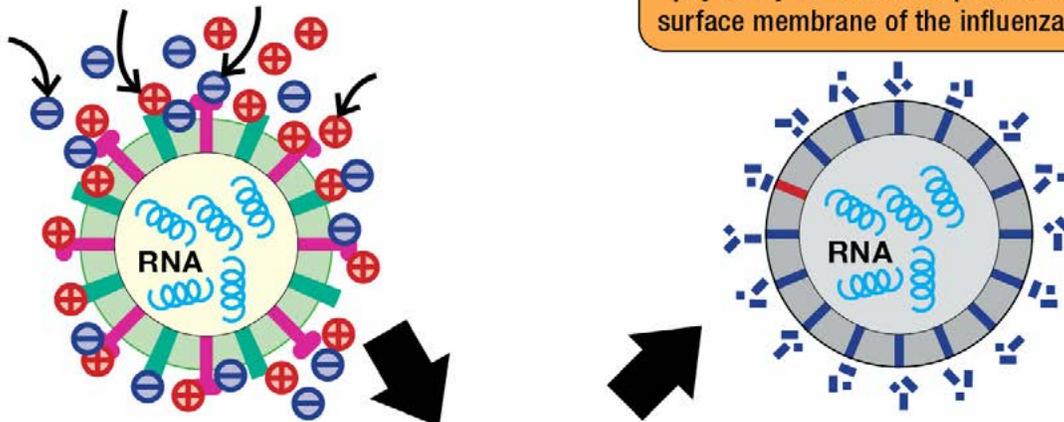
A petri dish containing a pathogen is placed underneath a laboratory hood, then monitored to assess the pathogen's reactivity to Needlepoint Bi-polar Ionization (NPBI) over time. This controlled environment allows for comparison across different types of pathogens.

## Rapid, Continuous Air Cleaning

iWave's NPBI technology releases a high concentration of positive and negative ions that immediately begin treating the indoor air quality issues inside your facility including certain bacteria and viruses. Contact with ions has microbicidal effects on certain viruses and bacteria, which ultimately disrupt their surface proteins and render them inactive. As these ions enter the airstream, they offer continuous treatment throughout the entire facility or home.

Positive and negative ions surround the surface membrane of the airborne virus.

A chemical reaction takes place that physically breaks down proteins in the surface membrane of the influenza virus.



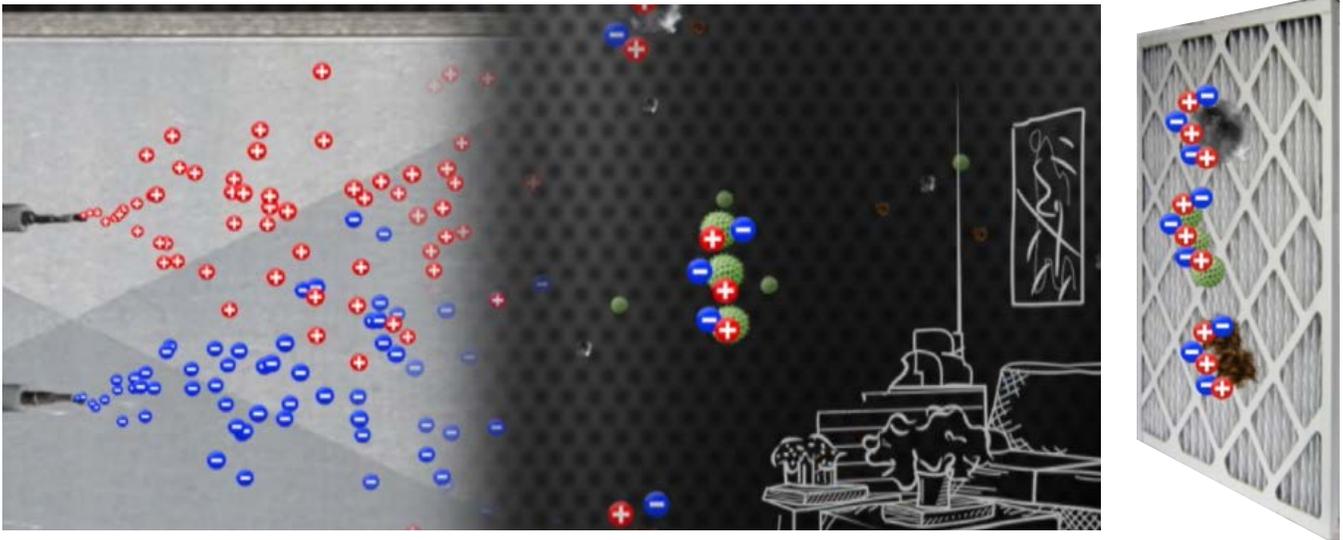
(Information taken from collaborative research done in association with Professor Gerhard Artmann of Aachen University of Applied Sciences in Germany.)

Through a chemical reaction occurring on the virus membrane surface, the ions are transformed into OH radicals, which are powerfully active but unstable.

OH radicals steal hydrogen atoms from the spike-like proteins that protrude from the surface of the virus membrane, opening holes in the membrane. When the OH radicals acquire a second hydrogen atom, they form water (H<sub>2</sub>O).

## How iWave Treats VOCs, Odors, and Airborne Particulate

Particles like dust, dander, smoke and even certain viruses and bacteria all can be suspended in the air we breathe, even when you don't see them. iWave's patented needlepoint bipolar ionization technology creates and releases ions into the airstream using your existing HVAC system as the delivery method. When these ions disperse throughout a space, they seek out and form bonds with particles in the air through a process called agglomeration. This creates a snowball effect in which particles begin to cluster together. The larger a cluster of particles becomes, the easier it is for your system to filter it out of the air. Third party lab testing of iWave's NPBI shows that a system using an iWave-R with a MERV 8 filter can achieve similar results as a system using a MERV 13 filter without an iWave.



## Ionization Helps Improve Filter Efficiency

MERV RATING	FILTER ONLY	FILTER + UVC***	FILTER + IONIZATION* **
6	6.2%	10%	34%
7	7%	12%	61%
8	11%	19%	84%
10	12%	35%	89%
13	46%	84%	97%
15	71%	97%	99%
16	76%	98.80%	99.90%
17 (HEPA)	99.90%	99.99%	99.999%

\*Ionization increases the filter efficiency 4-5 MERV levels. \*\*Does not take into account ionization kills in the space and on surfaces.

\*\*\*UVC does not effectively kill airborne pathogens in high RH conditions<sup>1</sup>

<sup>1</sup>ASHRAE technical paper on airborne infectious diseases

## INSPIRED BY NATURE

Naturally occurring ions are everywhere outdoors, and they are constantly working to clean the air. Ions are created with energy from rushing water, crashing waves and even sunlight. iWave's NPBI technology generates the same ions that nature produces. iWave devices are validated to meet UL 867 ozone requirements so you can freshen the air indoors.

# There's an iWave solution for any type of facility!



Healthcare Facilities	Gym and Athletic Facilities	Manufacturing Facilities
Higher Education	Assisted Living Facilities	Hotels and Resorts
Military and Government	Correctional Facilities	Residential
Restaurants	Recreational Facilities	Places of Worship

## **What is iWave's Needlepoint Bipolar Ionization technology?**

NBPI is an artificial generation of both positive and negative ions through needlepoints that treats the air in the breathing space.

## **How long do ions last in the air?**

Typically, small ions have a life expectancy of up to 60 seconds before they touch a surface or particulate to discharge.

## **Do iWave air ionizers affect COVID-19?**

iWave Air Ionization Systems will reduce SARS-CoV-2, the virus that causes the COVID-19 disease. Through independent lab tests, iWave has been proven to eliminate 99.4% of the SARS-CoV-2 virus within 30 minutes. See iWave's Performance Data for more information.

## **Does iWave produce ozone?**

iWave is UL 867 ozone standard certified to produce no harmful levels of ozone.

## **Will one device properly sized and installed address both coil cleanliness and assigned space ionization requirements?**

Possibly. Ionization does not have a one-size-fits-all solution. Distance from the equipment to space and duct design play major roles in this equation. Contact your contractor for more information on your application.

## **Do air filters need to be changed more frequently when used with iWave?**

Filter change intervals may be increased in some applications based on run time and how the space is utilized. Most applications can maintain their existing filter change schedule.

## **Does ionization degrade filters, insulation, wire coatings, and plastic like UV lights?**

No. Ionization leaves other equipment unaffected.

## **Does ionization have an odor to it?**

No, ionization is odorless. Some customers have experienced a change in the way the ionized space smells due to the removal of odors they had grown accustomed to.



**iWave-C**

No maintenance air ionization system for commercial and residential systems



**iWave-R**

Self-cleaning, maintenance-free air ionization system for residential systems



**iWave-M**

Mini flexible air ionization system for mini-splits and other systems



**iWave-V**

Low maintenance air ionization system for residential systems