



NPBI GPS Products Installation, Maintenance & Cost

Ted Frisbee President – Hobson Fabricating

Mike Perez Sales Manager – Norbryhn Equipment Co.



Who is Hobson Fabrication?



- Locally owned & operated since 1960
- HVAC, Roofing, Architectural & Specialty Metal Fabricator
- Union Mechanical HVAC Contractor
- 120 Employees



AGENDA

- Who is using GPS NPBI Nationally?
- Brief GPS Technology Overview.
- Products & Installation examples.
- Maintenance & Consumables.
- Nampa Charter School Cost evaluation.
- Budget overview of different system types.
- Question & Answer.

Higher Education



SMU



HARVARD
UNIVERSITY



THE UNIVERSITY OF
TULSA



Yale University

Virginia
Tech
1872



CLEMSON
UNIVERSITY



Tulane
University



*Google
Chicago & San Jose*



Google

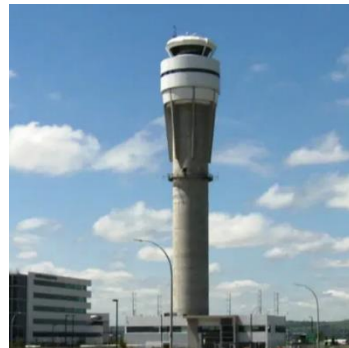
*GPS' Ion Bars
Throughout
Facility*



Airports & Military



Phoenix Skyharbor



YYC Control Tower

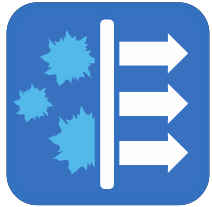


The Whitehouse



SARS coV 2 vs. Surrogate Coronavirus

“P.O.P.E.” – NPBI BENEFITS



Particle Reduction – Technology makes particles clump together and a lower efficiency filter can capture them from the air



Odor Control – Odors, volatile organic compounds and the like are oxidized to gases already prevalent in the air such as oxygen, nitrogen, water vapor or carbon dioxide, eliminating the odors



Pathogen Control – Independent testing by CDC Affiliate Labs confirms kill rates as high as 99.9% of various pathogens and mold spores. Keeps new cooling coils clean and cleans up old coils.



Energy Savings by Outside Air Reduction – By cleaning indoor air and recirculating it – Less Outside Air is required.

Less OA = Less Load on Cooling/Heating System – ASHRAE 62 & IMC Compliant

Needlepoint Bipolar Ionization (NPBI)

SARS-CoV-2 (COVID-19)

3rd Party Testing Summary

Pathogen	Time in Chamber	Kill Rate	Test Agency
Tuberculosis	60 minutes	69.09%	EMSL
Clostridium Difficile	30 minutes	86.87%	EMSL
Norovirus	30 minutes	93.50%	ATS Labs
MRSA	30 minutes	96.24%	EMSL
Staphylococcus	30 minutes	96.24%	EMSL
Mold Spores	24 hours	99.50%	GCA
E.coli	15 minutes	99.68%	EMSL
Legionella	30 minutes	99.71%	EMSL

TIME IN CHAMBER	SARS coV 2
30 MINUTES	RATE OF REDUCTION
	99.4%

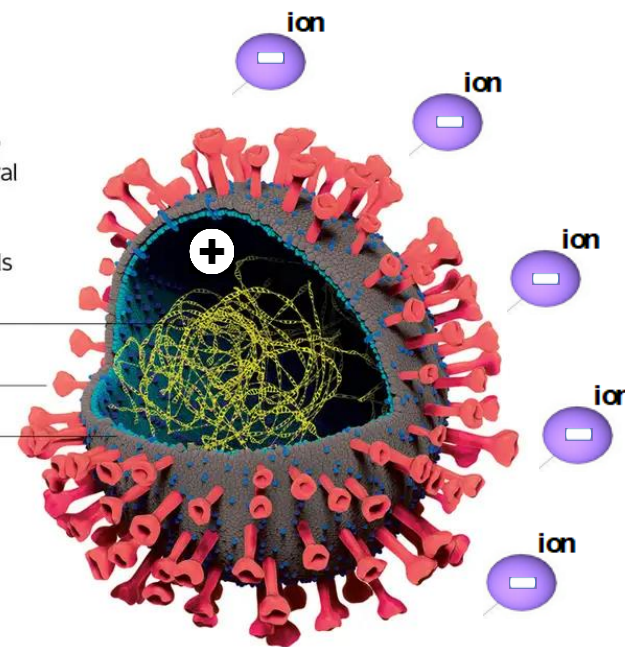
Disrupts DNA/RNA of Viruses

NEGATIVE ION ATTRACTED TO VIRUS MEMBRANE

Anatomy of a virus

The covid-19 virus has several features we may be able to target with drugs to break it down and stop it entering cells

- RNA enclosed in protein
- Spike protein
- Lipid membranes



NEGATIVE IONS BREAK DOWN PROTEIN IN SPIKES & MEMBRANE, DISRUPT RNA LEAVING VIRUS INCAPABLE OF INFECTIVITY

The HVAC System Contributes to "Indoor" Social-Distancing



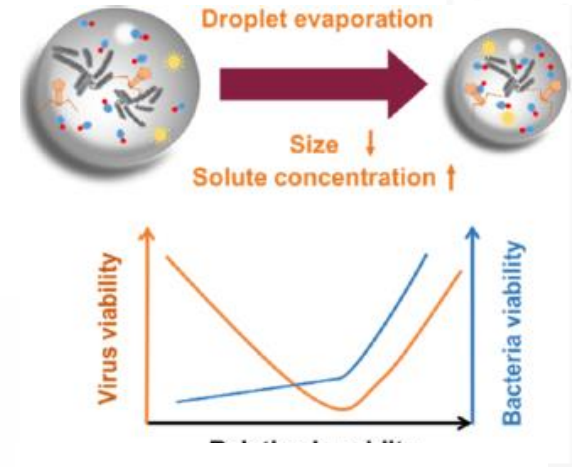
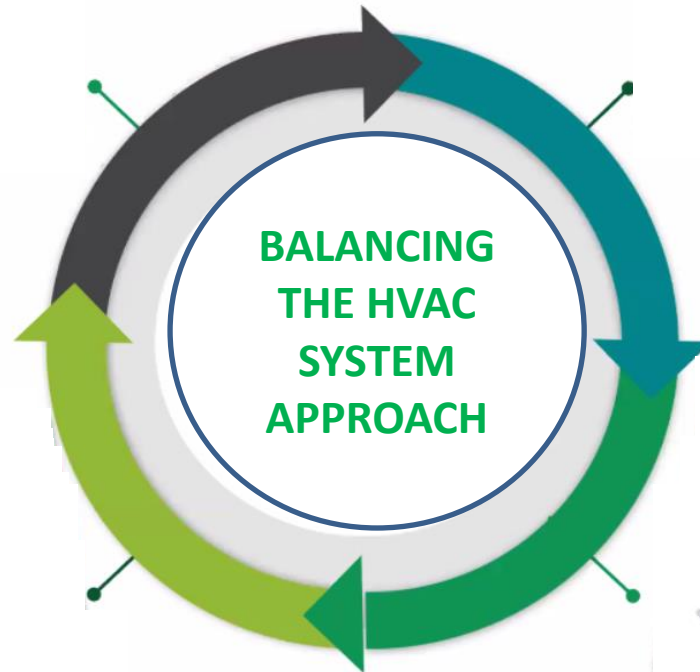
Needlepoint Bipolar Ionization (NPBI)



Ventilation

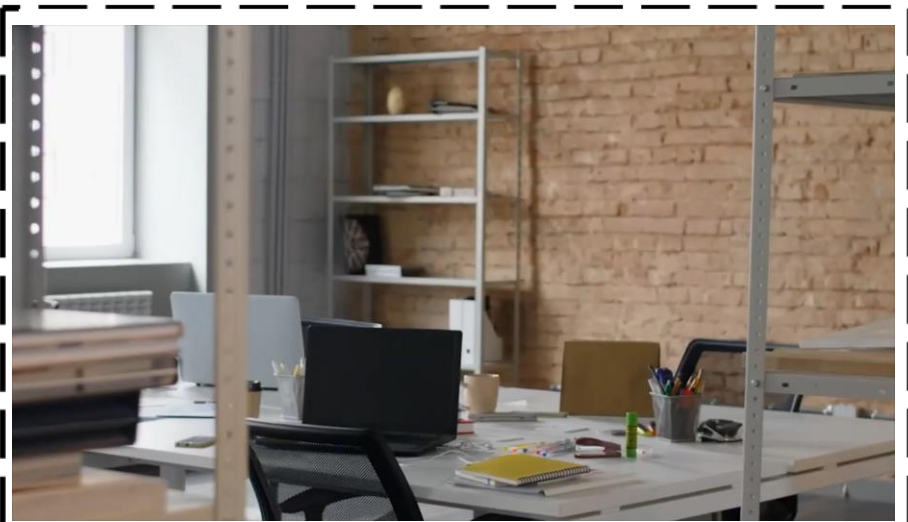


Filtration

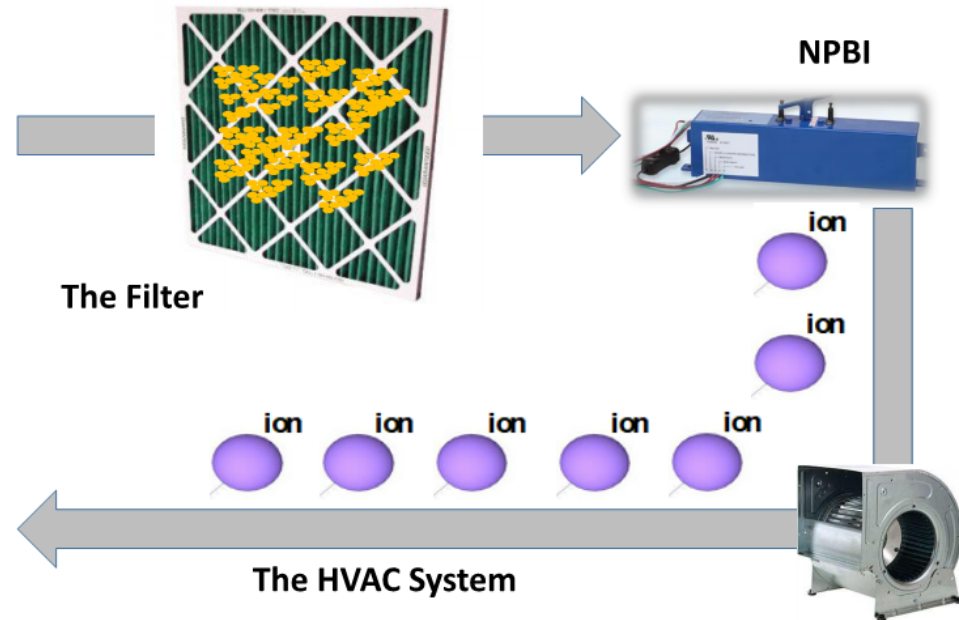


Advanced IAQ
(Indoor Air Quality)

Needle-Point Bipolar Ionization (NPBI)



The Space



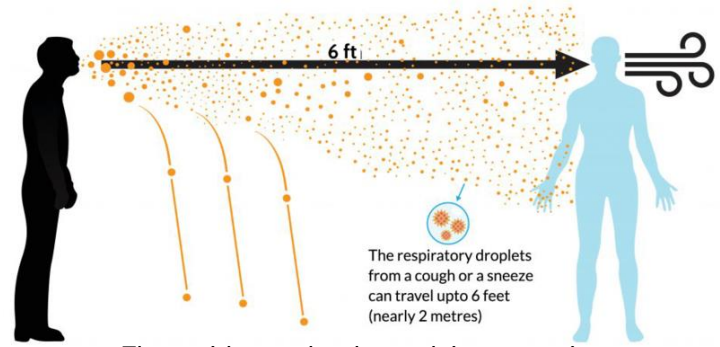
Treats Air in Space & in HVAC System

How NPBI Mitigates Airborne Viral Transmission

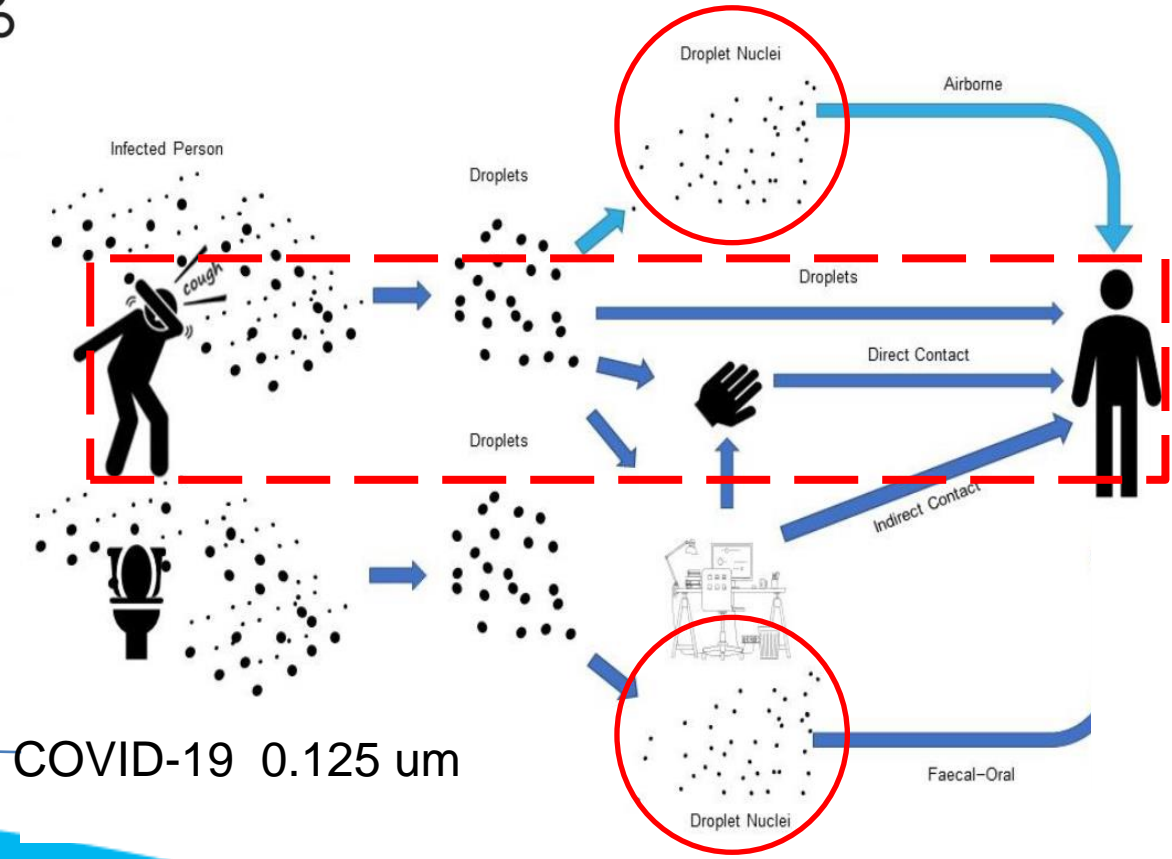
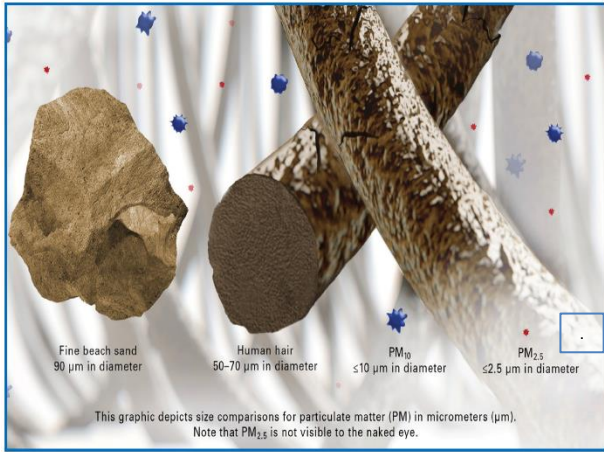


HVAC Indoor Social Distancing

The SARS-CoV-2 virus can “live” hours to days in air and on surfaces



These airborne droplet nuclei can remain suspended in the environment indefinitely and be transported over great distances



Particle Agglomeration Test

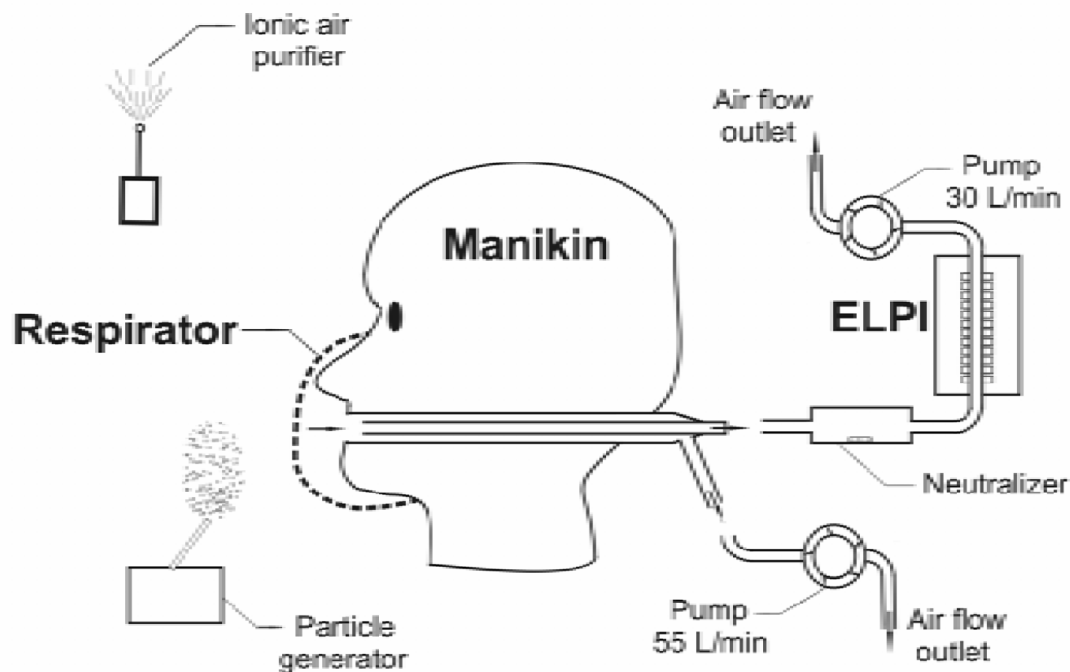


Filtering Efficiency of N95- and R95-Type Facepiece Respirators, Dust-Mist Facepiece Respirators, and Surgical Masks Operating in Unipolarly Ionized Indoor Air Environments

Table 1. Enhancement factors due to the ion emission for four facepiece filtering masks.

Half-mask respirator	N95	R95	Dust-mist respirator	Surgical mask
Enhancement factor	48.4	22.3	3250	194

Note: Ion emitter = VI-2500; inhalation flow rate = 30 L/min; emission time = 12 min.



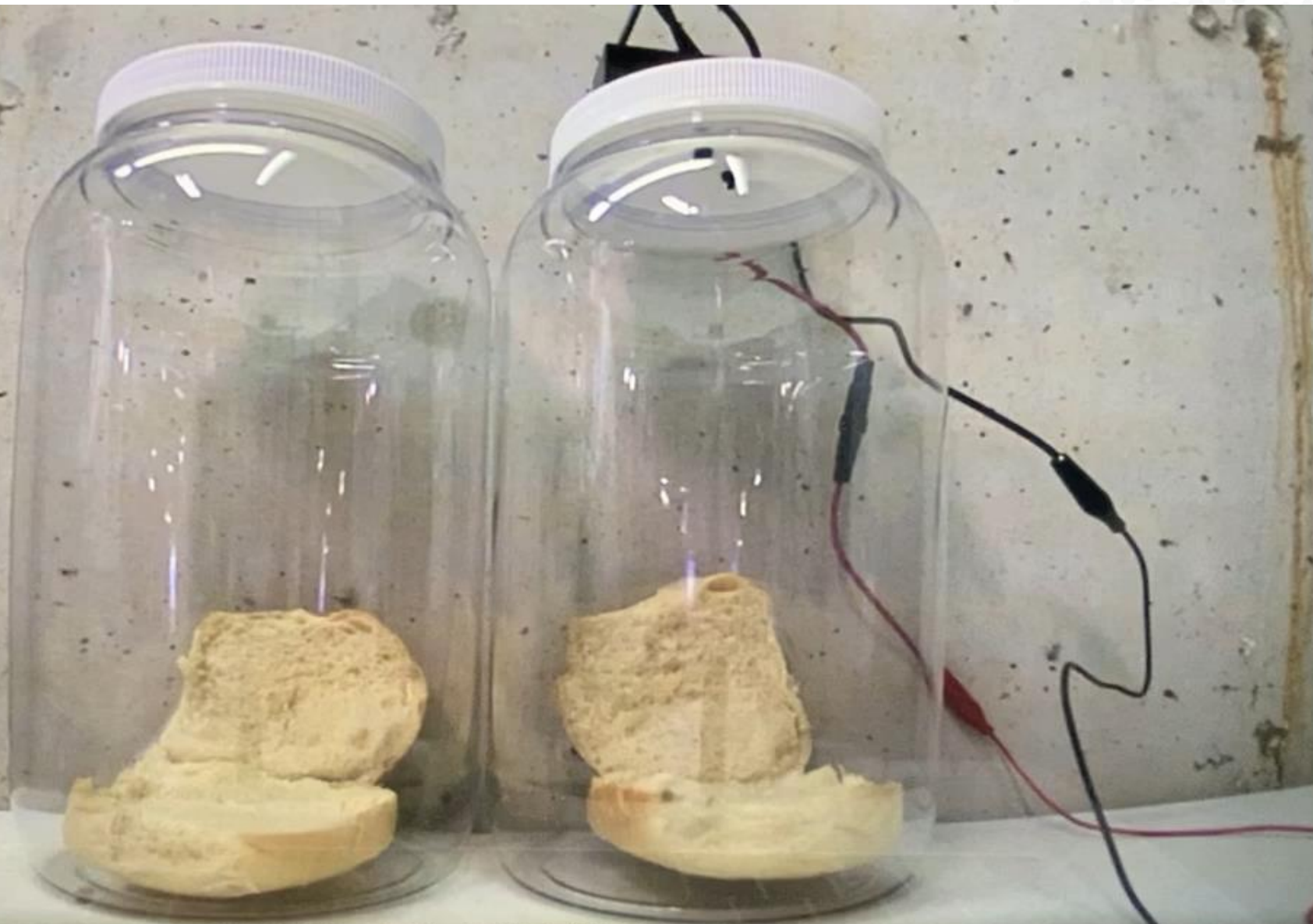
Data Provided by:

Center for Health-Related
Aerosol Studies

Dept. of Environ. Health
University of Cincinnati



Time Lapse of Bread/Mold Ion Test



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NPBI PRODUCT OFFERING



GPS-iRIB-36 or -18

Flexible Ionization Ribbon – 110V to 240VAC or DC



Typical Location Install on Ductless Wall System:

Figure 6

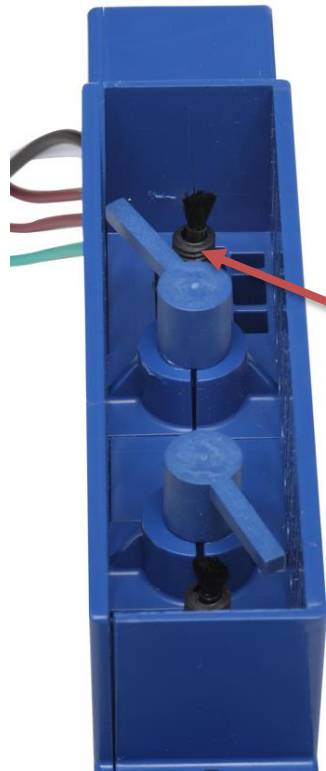


Affix the iRIB power pack to back of cabinet and wire to L1/L2 or S1/S2, leave on 24/7. Alarm contacts provided

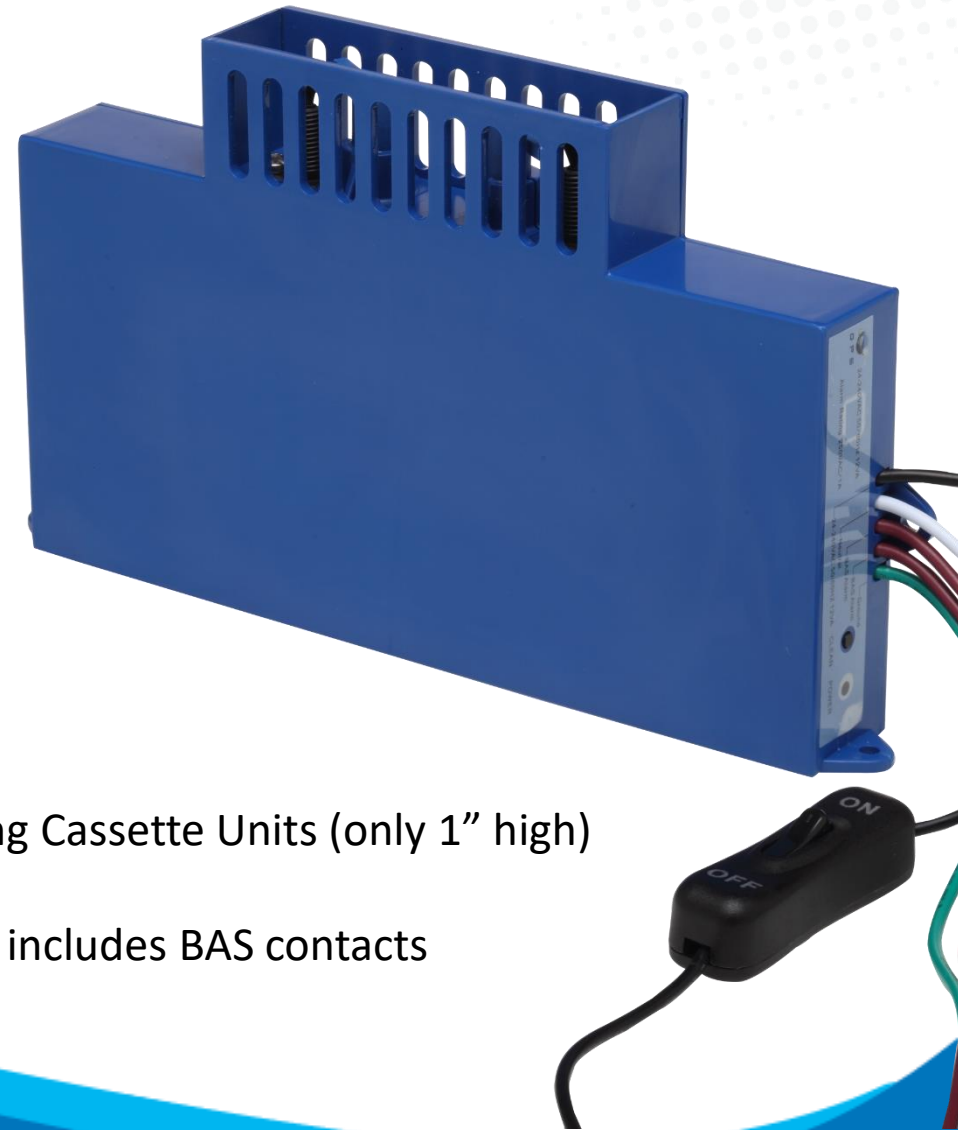
Affix the iRIB to the top of the coil on the plastic strip or to the top of the fins to treat the coil, blower and space

Self-Cleaning Ion Generator GPS-FC24-AC

GPS®



Two self-cleaning wiper blades for low profile



Designed for VRF/VRV Ceiling Cassette Units (only 1" high)
0-2,400 CFM
24VAC-240VAC or DC Input, includes BAS contacts

GPS-FC24-AC Installation



SELF CLEANING ION GENERATOR GPS-FC48-AC

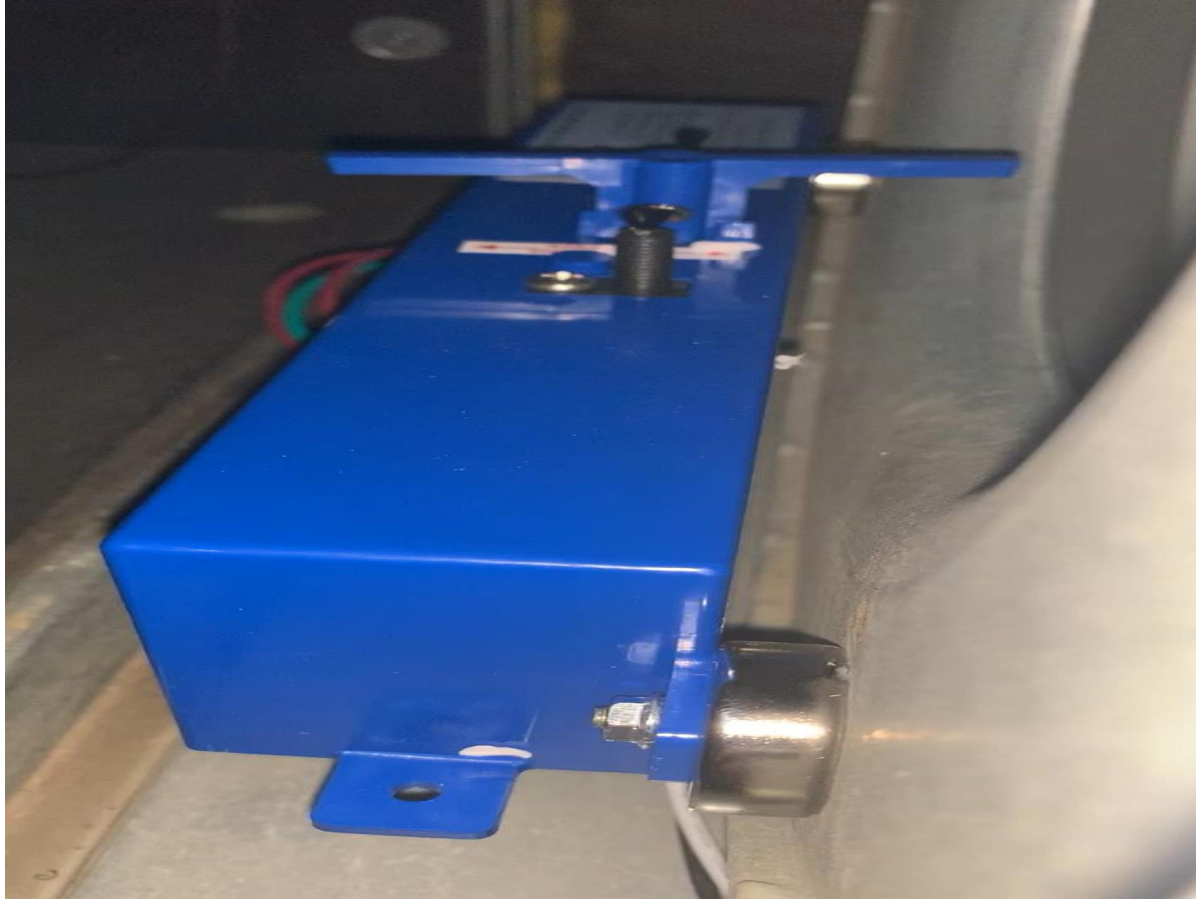


Capacity: 0-4,800 CFM

Self-Cleaning – No Maintenance

Universal Voltage: 24VAC-240VAC, with BAS contacts

GPS-FC48-AC Installed on Split DX 2 ton System



GPS-DM48-AC

WORLD'S FIRST SELF-CLEANING NPBI GENERATOR



2016 HVAC IAQ PRODUCT OF THE YEAR!

0-4,800 CFM, Mounts Indoors or Out

24-240VAC Universal Voltage Input w/BAS Contacts

Provided with Display for Operation Status



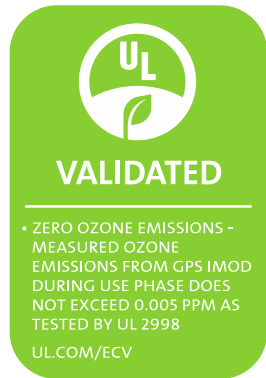
GPS-DM48-AC Installation



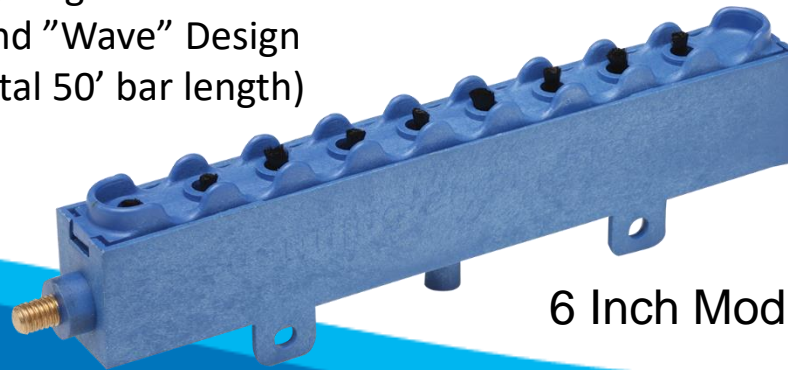
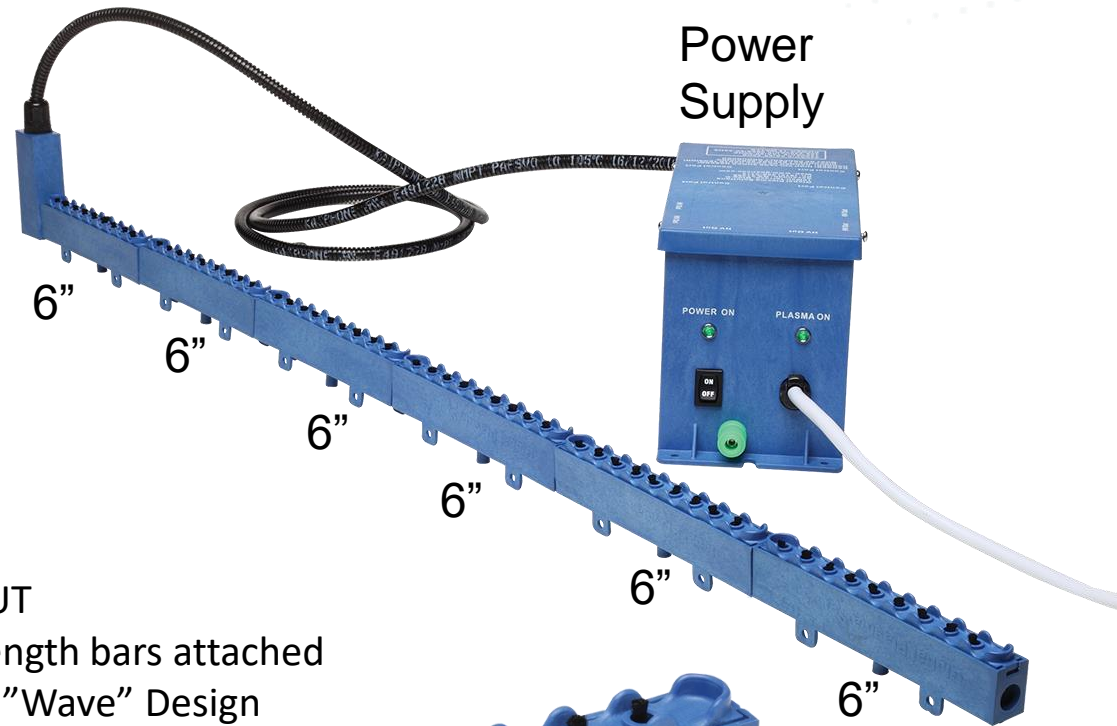
GPS-iMOD (AC Output Device)



Modular Ionization Product – Fits Any Size HVAC System



- 24VAC, 110VAC or 208-240VAC INPUT
- 15W power total for any quantity/length bars attached
- Self-Cleaning Due to AC Output and "Wave" Design
- Up to 6 bars per power supply (total 50' bar length)
- OSHPD CERTIFIED



6 Inch Modular Section



GPS-iMOD Installation



How do you know it's working?



Measurement and Verification

Building Automation System integration and Sensors

- Unit operating (on/off)
- Ion meters
- Particle meters
- Sense of smell
- Lab results (EMSL and ATS)

Space ionization goal is to add 1,500-7,000 ions/cc



Register your microsensor online to receive your extended warranty.





Hobson & GPS

Hobson has installed more GPS products than any other contractor in the state of Idaho

- Over 25 building installations totaling \$750k+
- 250+ individual device Installations
- Schools, Office Buildings, Manufacturing, Retail, Healthcare

GPS can be installed in any HVAC unit that moves air



Nampa Charter Schools



Liberty Charter & Bryant McKnight Center:

- 38 total HVAC units
- Installed Cost: \$22,990
- Total Install hours: Approx. 20-hours

Victory Charter School:

- 24 total HVAC units
- Installed Cost: \$14,630
- Total Install hours: Approx. 13-hours

Legacy Charter School:

- 18 total HVAC units
- Installed Cost: \$9,405
- Total Install hours: Approx. 10-hours

Overall Average Install time/unit
30-Minutes/unit

Overall Average Cost Per HVAC Unit
\$600/Unit



Not All HVAC Systems are the same



*****Installation Cost is driven by unit type*****



Rooftop HVAC units generally make for the easiest/fastest installations



Indoor Concealed units like WSHP can take longer to locate/install GPS



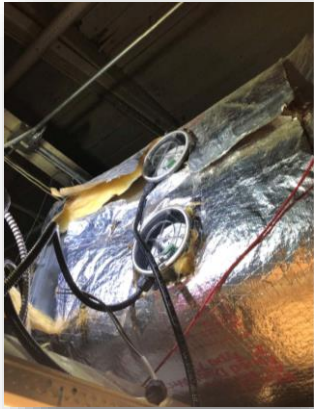
Easily accessible roof top systems: **\$600 - \$1,000/unit**

Indoor concealed systems can range from: **\$1,000 - \$1,500/unit**

Installation Overview



GPS-DM48-AC™ | [GPS-DM48-AC Manual](#)



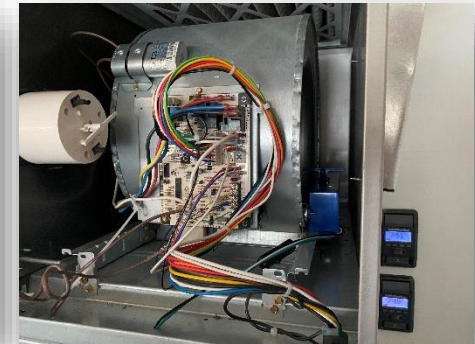
GPS-FC48-AC™ | [GPS-FC48-AC Manual](#)



GPS-iMOD® | [GPS-iMOD Manual](#)



GPS-FC Devices® | [GPS Manual](#)



Questions?

The logo for GPS, featuring the letters "GPS" in a bold, blue, sans-serif font with a stylized blue wave underneath.The logo for Hobson Fabricating Corp., featuring the word "Hobson" in a large, stylized, blue font with a white outline, and "Fabricating Corp." in a smaller, black font below it.