

GPS[®]

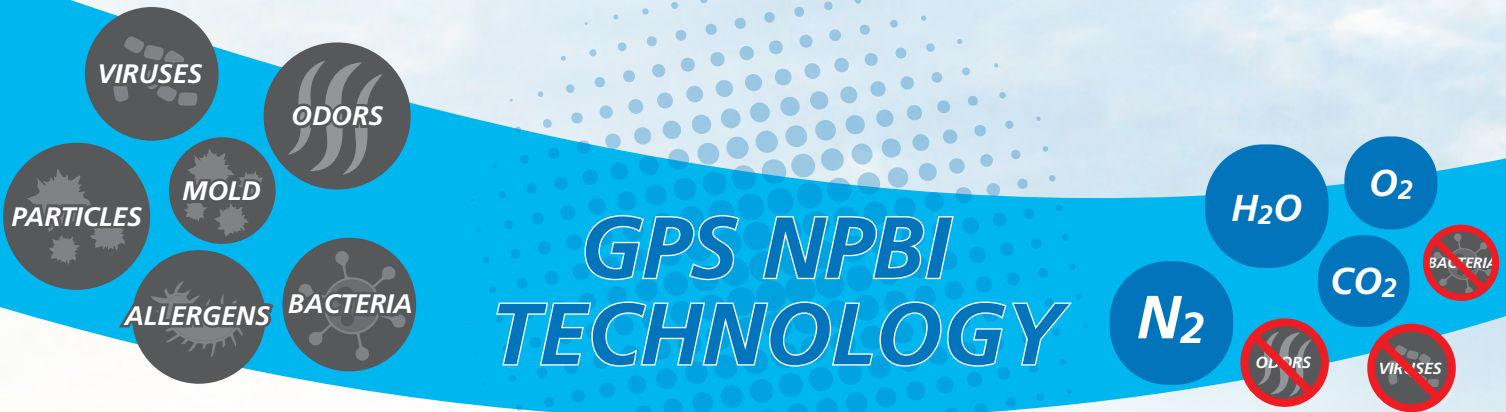
GLOBAL PLASMA
SOLUTIONS



Engineering Air for a Cleaner World™

How Ionization Works

GPS' NPBI technology works to safely clean the air inside industrial, commercial and residential buildings. The patented technology uses an electronic charge to create a plasma field filled with a high concentration of + and - ions. As these ions travel with the air stream they attach to particles, pathogens and gas molecules. The ions help to agglomerate fine sub-micron particles, making them filterable. The ions kill pathogens by robbing them of life-sustaining hydrogen. The ions breakdown harmful VOCs with an Electron Volt Potential under twelve (eV<12) into harmless compounds like O₂, CO₂, N₂, and H₂O. The ions produced travel within the air stream into the occupied spaces, cleaning the air everywhere the ions travel, even in spaces unseen.



What is an Ion you may ask?

An ion is a molecule or atom that is positively or negatively charged, meaning that it has electrons to give or needs electrons to become uncharged, thus becoming stable.

Mother Nature's Way of Cleaning

GPS' technology generates the same ions as Mother Nature creates with lightning, waterfalls, and ocean waves. Mother Nature uses energy to break apart molecules. It is nature's way of cleansing the air naturally and creating a healthy environment. The only difference is that GPS' technology does it without forming ozone or other harmful byproducts.

GPS FACT: GPS can be installed in any system in any building...

- Agriculture
- Airports
- Animal Care
- Arenas & Stadiums
- Banks
- Casinos
- Child Care
- Convention Centers
- Fitness
- Food Service
- Healthcare
- Hospitality
- Hospitals
- Institutional
- Manufacturing
- Office Building
- Retail
- Schools & Universities
- Senior Care
- Transportation
- Theater
- Worship

Truly a revolutionIZER

A pioneer with many innovations:

1st

- ... with universal power supply
- ... with auto-cleaning
- ... duct-mounted design
- ... to use carbon fiber brush needlepoint emitters
- ... with ionization bar
- ... with flexible ionization strip
- ... modular ionization bar
- ... to achieve UL 867 Ozone Standard
- ... AND ONLY to pass the RCTA DO-160 standard for aircraft
- ... to be installed on a commercial jet
- ... to be certified by FAA
- ... to be installed in commercial hand driers
- ... AND ONLY to receive UL 2998 Ozone Free Certification
- ... to receive OSPHD seismic (OSP) certification



GPS' NPBI technology has been certified by UL 867 and UL 2998 to be ozone free.

GPS DELIVERS P.O.P.E.



Particle Reduction

The GPS NPBI technology reduces airborne particles (i.e., dust, pet dander, pollen) through agglomeration. The ions attach to the airborne particles. The particles are subsequently attracted to one another, effectively increasing their mass and size. The air filtration system easily captures the larger particles, increasing the capture efficiency of your HVAC system.



Pathogen Reduction

During the GPS cleaning process the NPBI technology attacks and kills viruses, mold spores and bacteria. The ions steal away hydrogen from the pathogens, leaving them to die, and leaving you with clean and healthy indoor air.



Odor Reduction

During the GPS cleaning process chemical, pet, cooking, and other odors are broken down into basic harmless compounds, leaving the indoor air fresh smelling and free of odor causing VOCs.



Energy Saving

GPS' environmentally friendly cleaning process allows commercial buildings to significantly reduce the amount of outdoor air required to operate. This equates to a safer, more comfortable environment reducing outside air intake by up to 75%.

THE GPS ADVANTAGE

	GPS NPBI	OTHER BPI	CORONA DISCHARGE	HEPA FILTERS	CARBON FILTERS	ULTRAVIOLET (UV)	UV-PCO
Produces Harmful Byproducts	None	Yes	Yes	No	No	Yes	Yes
Reduces Airborne Particles	✓	Yes	Yes	Yes	No	No	No
Destroys VOCs	✓	Yes	Yes	No	Captures	No	Yes
Kills Pathogens	✓	Yes	Yes	No	Captures	Yes	Yes
Reduces Energy Cost	30%	Yes	Yes	No	No	No	No
UL 2998 No-Ozone Certified	✓	No	No	N/A	N/A	N/A	N/A
Treats In-Room Air	✓	Yes	Yes	No	No	No	No
No Replacement Parts	✓	No	No	No	No	No	No
Auto Self-Cleaning	✓	No	No	No	No	No	No
Simple to Install	✓	No	No	No	No	No	No
Low Total Cost	✓	Yes	No	No	No	No	No

AUTO-CLEANING NPBI

GPS-FC48-AC™

An automatic self-cleaning, lightweight NPBI system that handles up to **4,800 CFM or 12 tons**. Designed for multiple mounting options including fan inlet, interior duct walls or floors. The composite construction allows for mounting in corrosive environments.

UNIVERSAL VOLTAGE

Features

- > 400 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts



MAINTENANCE FREE



Features

- > 300 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts



CARBON FIBER EMITTERS

GPS-FC24-AC™

An automatic self-cleaning, lightweight NPBI system that handles up to **2,400 CFM or 6 tons**. Designed for multiple mounting options including fan inlet, interior duct walls or floors. The composite construction allows for mounting in corrosive environments.

APPLICATIONS

- | | |
|----------------------|--------------------------|
| • Agriculture | • Hospitality |
| • Airports | • Hospitals |
| • Animal Care | • Institutional |
| • Arenas & Stadiums | • Manufacturing |
| • Banks | • Office Building |
| • Casinos | • Retail |
| • Child Care | • Schools & Universities |
| • Convention Centers | • Senior Care |
| • Fitness | • Transportation |
| • Food Service | • Theaters |
| • Healthcare | • Worship |

GPS-DM48-AC™

The world's first automatic self-cleaning, duct mounted, lightweight NPBI electronic air cleaner. The maintenance free unit is designed for indoor or outdoor duct mounting and can handle up to **4,800 CFM or 12 tons**.

SELF-CLEANING

Features

- > 400 Million + and – Ions Per cc/sec
- Universal Voltage Input (24 – 240 VAC)
- Programmable Auto-Cleaning Cycle
- Carbon Fiber Brush Emitters
- Alarm Contacts
- 3/4 Quick-Turn Duct Adapter



2016 IAQ GOLD AWARD WINNER



BARS & STRIPS

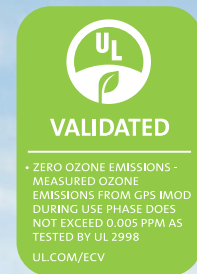


GPS-iMOD®

The GPS-iMOD is a modular NPBI system that is field assembled to any length up to 240 inches in 6-inch increments. The fiberglass composite and carbon fiber GPS-iMOD can be mounted in corrosive environments. It can treat 50 – 250 CFM per inch of bar, depending on the application.

Features

- > 140 Million + and - Ions Per Inch/cc/sec
- Universal Voltage Selector Switch
- Six HV Output Ports
- Alarm Contacts
- Illuminated On/Off Switch
- Plasma on Indication Light
- UL 2998 Ozone Free



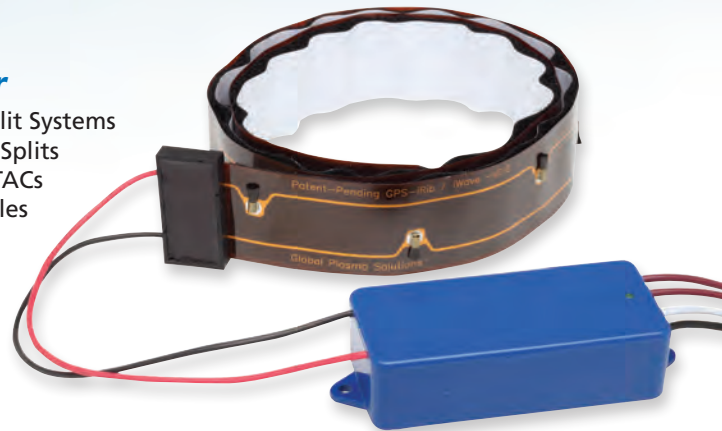
OSH PD

GPS-iRIB® 18/36

The GPS-iRIB is available in 18" and 36" lengths. They are made from a flexible chemical, heat and cold resistant Kapton® material containing a circuit with special carbon fiber ion emitters soldered into the circuit traces. This mechanism is engineered to deliver the highest level of ionization with the least amount of energy in the most compact size. **Designed for 3200 CFM or 8 tons.**

Perfect For

- Traditional Split Systems
- Ductless Mini Splits
- Heat Pump PTACs
- Ducted Modules
- Fan Coils



Features

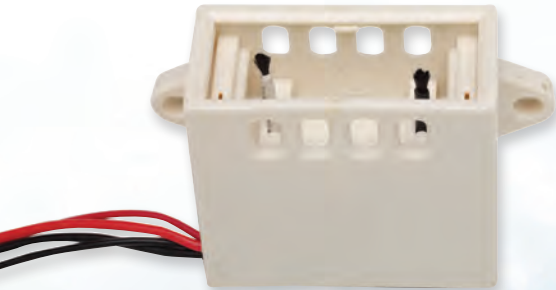
- > 35 Million + and - Ions Per Foot/cc/sec
- Fold-To-Length Circuit
- Local LED Power Indication
- Integral Control Relay for BAS Interface
- Velcro® for Easy Installation
- Voltage Input 110VAC to 240VAC



GPS-NEMA4-OE

The GPS-NEMA4-OE is a NEMA 4X-rated fiberglass enclosure designed to house one GPS-iMOD power supply. The panel adds a superior finished look to any project while providing the required protection against foreign substances, such as water and dust, when power supplies are mounted in non-NEMA 1 rated environment.

COMPACT NPBI



GPS-FC-1™ / GPS-FC-2™

The GPS-FC series is designed to be mounted inside fan coils, heat pumps, PTACs, ductless mini-splits and air handlers up to **1,200 CFM or 3 tons**. Their compact size allows them to be mounted almost anywhere in just a few minutes.

Features

- > 25 Million + and – Ions Per cc/sec
- GPS-FC-1 Powered by 110 - 120 Volts AC
- GPS-FC-2 Powered by 208 – 240 Volts AC
- Carbon Fiber Brushes
- LED Operation Status
- Carbon Fiber Brush Emitters



GPS-FC-3-BAS™

The GPS-FC-3-BAS unit is designed to be mounted inside fan coils, heat pumps, PTACs, ductless mini-splits, and air handlers up to **3,200 CFM or 8 tons**. Its compact size and simple mounting requirements allow it to be quickly mounted almost anywhere.

Features

- > 170 Million + and – Ions Per cc/sec
- Powered by 24 Volts AC
- Carbon Fiber Brush Emitters
- BAS Alarm Contacts
- LED Operation Status

SENSORS & MEASUREMENTS

GPS-iMEASURE™

The GPS-iMEASURE is the first commercially available ion detector that can be permanently mounted in the space to measure ion levels in real time and report back to a BAS.



MONITOR IONIZATION LEVELS REMOTELY

- Auto Calibration/Auto Zero
- 0 – 1,000,000 Ions/cc

GPS-iMEASURE-D™

The GPS-iMEASURE-D ion detector is permanently mounted in the duct downstream of any GPS ionization device. It measures ion levels in real time and reports back to a BAS. It includes three sensitivity levels: 20,000/200,000/2,000,000 ions/cc/sec that can be set based on the application and in-duct location.

MONITOR IN-DUCT IONIZATION LEVELS

- 20,000 to 2M Ions/cc
- Input Voltage 12 to 24V AC or DC
- LED Operation Status



GPS-iDETECT-P™

The GPS-iDETECT-P is a plenum-mounted ionization detector that confirms the output from the GPS-iMOD. The GPS-iDETECT-P provides the ability to monitor ionization status in a plenum to confirm that the ionization equipment is working properly.



Features

- Universal Voltage Input
- 1,000 – 200,000,000 Ions/cc (+ or -)
- 0-100% Humidity

REDUCING THE SPREAD OF DISEASE Through Better Indoor Air

GPS clears the air of particles faster

Particulate matter includes pollutants, dust, allergens, mold, bacteria – and viruses. GPS' technology constantly generates a high concentration of positively and negatively charged ions. These ions travel through the air continuously seeking out and attaching to particles. Larger by virtue of combination, they are more easily captured by the ventilation and filtration systems or become too heavy to remain suspended in the air.

GPS Inactivates Pathogens

When ions come into contact with pathogens, they steal away hydrogen from the pathogens, reducing the infectivity of the virus.

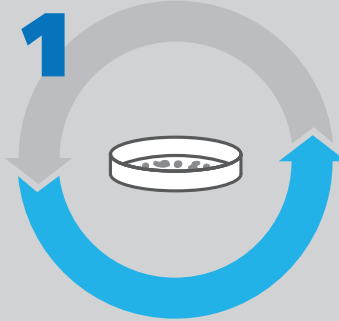
GPS is Safe

Our needlepoint bipolar ionization is OZONE free and safe to use across commercial, industrial and residential buildings. Traditional bipolar ionization systems produce harmful ozone as a byproduct.

***DISCLAIMER:** Global Plasma Solutions (GPS) uses multiple data points to formulate performance validation statements. GPS technology is used in a wide range of applications across diverse environmental conditions. Since locations will vary, clients should evaluate their individual application and environmental conditions when making an assessment regarding the technology's potential benefits.

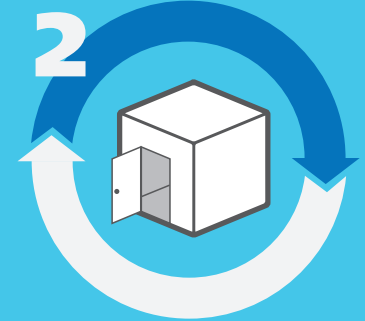
The use of this technology is not intended to take the place of reasonable precautions to prevent the transmission of pathogens. It is important to comply with all applicable public health laws and guidelines issued by federal, state, and local governments and health authorities as well as official guidance published by the Centers for Disease Control and Prevention (CDC) (<https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>), including but not limited to social distancing, hand hygiene, cough etiquette, and the use of face masks.

SENSITIVITY TESTING



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

SIMULATION TESTING



Counts of airborne pathogens are taken before and after aerosolizing them into a sealed, unoccupied laboratory environmental room installed with NPBI technology. The larger space more closely resembles a real-world environment.

Norovirus[†]

TIME IN CHAMBER 30 MINUTES
RATE OF REDUCTION 93.5%

[†] Surrogate for Norovirus, actual strain tested was Feline Calicivirus, ATCC VR-782, Strain F-9



Tuberculosis

TIME IN CHAMBER 60 MINUTES
RATE OF REDUCTION 69.0%



Human Coronavirus^{††}

TIME IN CHAMBER 60 MINUTES
RATE OF REDUCTION 90.0%

^{††} Surrogate for Human Coronavirus SARS-CoV-2, actual strain tested was Human Coronavirus 229E



MRSA

TIME IN CHAMBER 30 MINUTES
RATE OF REDUCTION 96.2%



Legionella

TIME IN CHAMBER 30 MINUTES
RATE OF REDUCTION 99.7%



Staphylococcus

TIME IN CHAMBER 30 MINUTES
RATE OF REDUCTION 96.2%



Clostridium Difficile

TIME IN CHAMBER 30 MINUTES
RATE OF REDUCTION 86.8%



E.coli

TIME IN CHAMBER 15 MINUTES
RATE OF REDUCTION 99.6%



GPS PRODUCT CHART

GPS PRODUCT CHART			
AUTO-CLEANING LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-FC24-AC	24-240 VAC	2,400	> 300 million
GPS-FC48-AC	24-240 VAC	4,800	> 400 million
GPS-DM48-AC	24-240 VAC	4,800	> 400 million
COMPACT LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-FC-1	110-120 VAC	1,200	> 25 million
GPS-FC-2	208-240 VAC	1,200	> 25 million
GPS-FC-3-BAS	24 VAC	3,200	> 170 million
BARS & STRIPS LINE	VOLTAGE	CFM RATING	IONS/cc/sec
GPS-iMOD	24-240 VAC	50-250 CFM/inch	> 140 million/in
GPS-iRIB-18	110-240 VAC	3,200	> 35 million/ft
GPS-iRIB-36	110-240 VAC	3,200	> 35 million/ft

GPS FACT: Aviation Application

GPS' technology is the only active air purification system that has been designed and approved to operate in commercial and private aircraft. Aviation applications require passing the stringent RTCA DO-160 test proving the technology does not generate EMF, line noise or interfere with the avionics in any way. This is important to note because GPS' technology is used in many healthcare applications and will not cause interference with the imaging equipment.



Engineering Air for a Cleaner World™

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www.GlobalPlasmaSolutions.com

All technical information and advice given here are based on GPS previous experiences and/or test results. GPS gives this information to the best of its knowledge but assumes no legal responsibility. Customers are asked to check the suitability and usability in the specific application, since the performance of the product can only be judged when all necessary operating data are available. The above information is subject to change.

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