

Crystal Clean Air™

"Breathe with Ease"

**Concentrated Biogenic Ionization Solutions
Killing Pathogens Directly at the Source
One Molecule at a Time**



Contact **W.J.O'NEIL COMPANY**

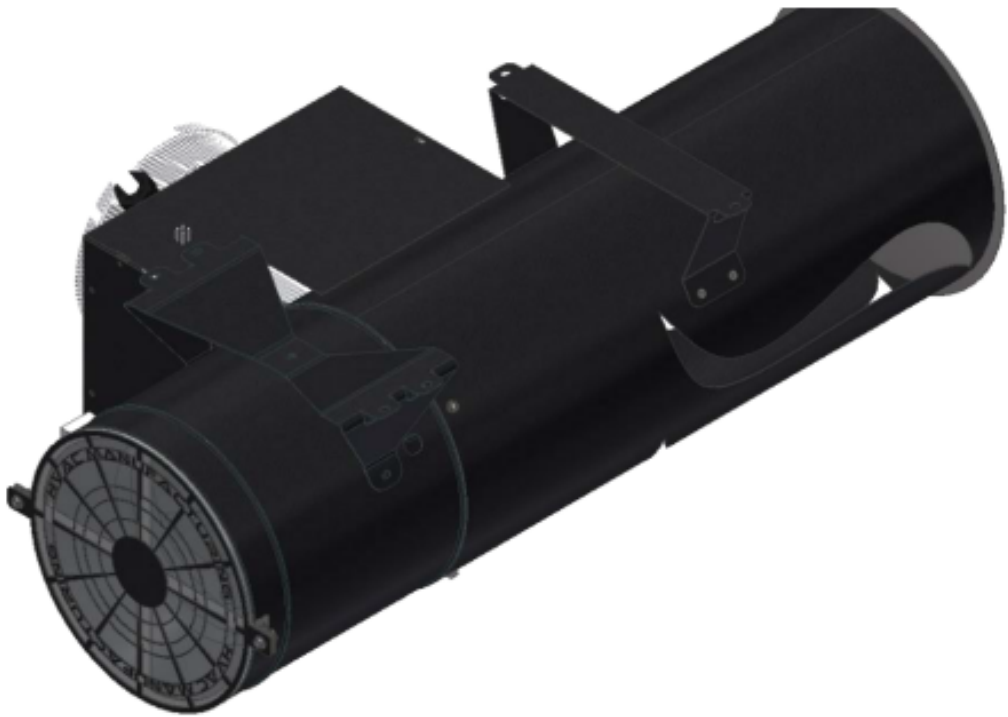
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Concentrated Biogenic Ionization Solutions



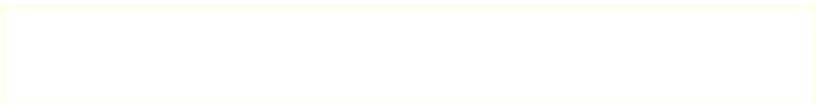
Concentrated Biogenic Ionization Solutions
Neutralizing Pathogens Directly at the Source



U.S. Small Business
Administration



SBA WOSB
Woman Owned Small Business



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Pathogens Propagate One Breathe at A Time

People are the main contributors of spreading infectious contaminants such as viruses, and other types of bacterial infections in a breathing area. A simple sneeze is passing pathogens to others within a confined space such as an elevator, waiting area, restroom, public transportation, or the office conference room.

Sick building syndrome (SBS) occurs when occupants of a building experience acute health effects that seem to be linked to time spent in a building. The complaints may be localized in a room, zone or may be widespread throughout the building.

IAQ (Indoor Air Quality) Dynamics

To a leaseholder, employee-compensation costs are by far the largest expense—more than 120 times the cost of providing HVAC. That is why dissatisfaction with IEQ (Indoor Environmental Comfort) and IAQ (Indoor Air Quality) are the top reasons owner's cite for leases not being renewed.

The US Environmental Protection Agency named IAQ (indoor air quality) as one of the top 5 health threats in the U.S. Most Americans spend up to 90% of their time indoors and many spend most of their working hours in an office environment. Studies conducted by the U.S. Environmental Protection Agency (EPA) and others show that indoor environments sometimes can have levels of pollutants that are higher than levels found outside as a result of poor building design or occupant activities resulting in SBS (Sick Building Syndrome).

IAQ is not a simple, easily defined concept like a desk or a leaky faucet. It is a constantly changing interaction of complex factors that affect the types, levels, and importance of pollutants in indoor environments.

Controlling indoor air quality involves integrating four main strategies. First, manage the sources of pollutants either by removing them from the building or isolating them from people through physical barriers, air pressure relationships, or by controlling the timing of their use. Second, dilute pollutants and remove them from the building through ventilation. Third, use filtration to clean the air of pollutants. Fourth, distribute concentrated biogenic Ionization directly at the source of the pathogens.

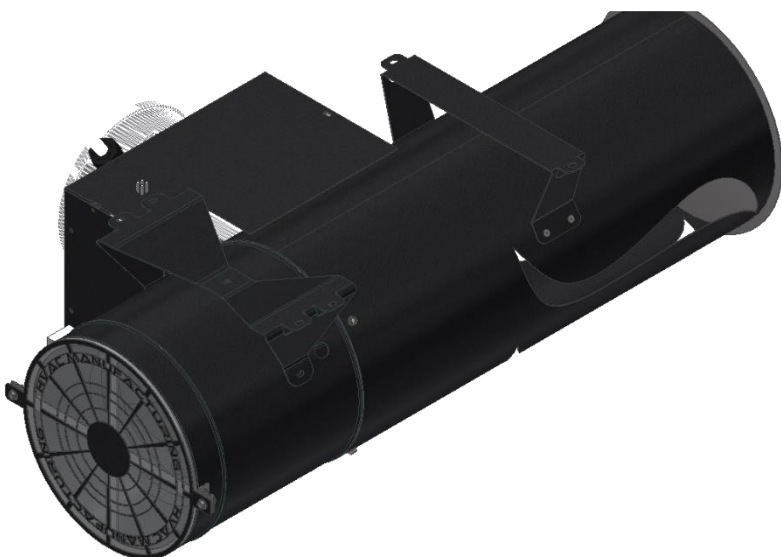
Energy Savings Commensurate to IAQ and IEQ

Buildings are the largest consumers of energy. Problems result when a building is operated or maintained in a manner that is inconsistent with its original design, prescribed operating procedures or with a low EUI (Energy Use Intensity).

EUI expresses a building's energy use as a function of its size or other characteristics. Generally, a low EUI signifies good energy performance. There is a balance on how much fresh air is allowed into the space commensurate to a low EUI rating. Substantial amounts of fresh outside air enhance IAQ and IEQ and help improve occupant comfort levels. However, increased fresh outside air delivered to a building needs to be conditioned, thus increasing the EUI rating. An increased EUI rating could result in losing LEED certification points.

Concentrated Biogenic Ionization Solutions

Crystal Clean Air's Ionization system purifies and recirculates the correct amount of tempered air by creating Millions of ions in the air jet and will continuously seek out and neutralize the contaminants directly at the source for optimum effectiveness. Therefore, allowing for the reduction of outside air commensurate to a low EUI rating.



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Crystal Clean Air™ Concentrated Biogenic Ionization Solutions

Crystal Clean Air™ CFD Modeling

Proper Space Air Diffusion

Crystal Clean Air's Biogenic Ionization products are Industrial Grade and made in the USA with the highest quality components. Crystal Clean Air's Biogenic Ionization projection air jet performance has an unconventional discharge jet pattern, that is required for ionization of the air to mix with the induced room air. The throw performance for the unit creates an isothermal uniform disbursement pattern which is a good starting point for the ions to travel. This also ensures the jet is not entrained to a surface such as the ceiling and walls.

A tremendous amount of engineering, computational Fluid Dynamic simulations and testing transpired in the design and manufacturing of our "plug and play" portable, concentrated biogenic Ionization units by our engineering team. Our CTO who is a retired MIT professor of Acoustical Physics led the design team of our Industrial grade, portable "Plug and Play" Ionization units to optimize the air entrainment patterns for optimum space air diffusion coverage of the Ions. Proper design of air entrainment patterns is critical for total and continuous area coverage of the ionization molecules to be effective. A high-performance variable speed fan allows for the exact amount of airflow commensurate to the space to be allocated. The universal design allows for placement in a room corresponding to the optimum zone dynamics relative to occupant traffic flow.

The closer to the source of the pathogen with a continuous supply of ions and proper isothermal uniform disbursement pattern the more effective the cleaning process. The technology is safe as it generates the same ions as Mother Nature creates with lightning, waterfalls, and ocean waves. It's Mother Nature's way of cleansing the air naturally and creating a healthy environment. The only difference between Crystal Clean Air's technology and Mother Nature is that Crystal Clean Air's technology does it without developing detectable levels of ozone.

The universal "plug and play" design allows for numerous types of applications and installation configurations. The "Plug and Play" concentrated biogenic ionization units can be installed in a vertical or horizontal application in the most optimum location of a room depending on the space use. It can lie on a desk, a manufacturing tabletop, or mounted from the ceiling. The products are light weight and easily transportable. Simply plug in the unit, adjust the fan outlet velocity and millions of nature's clean air Ions continuously clean the air you breathe with a wide air dispersion, for a total room air entrainment coverage.



Air Distribution after 5 sec.



Air Distribution after 15 sec.



Air Distribution after 30 sec.



Air Distribution after 45 sec.

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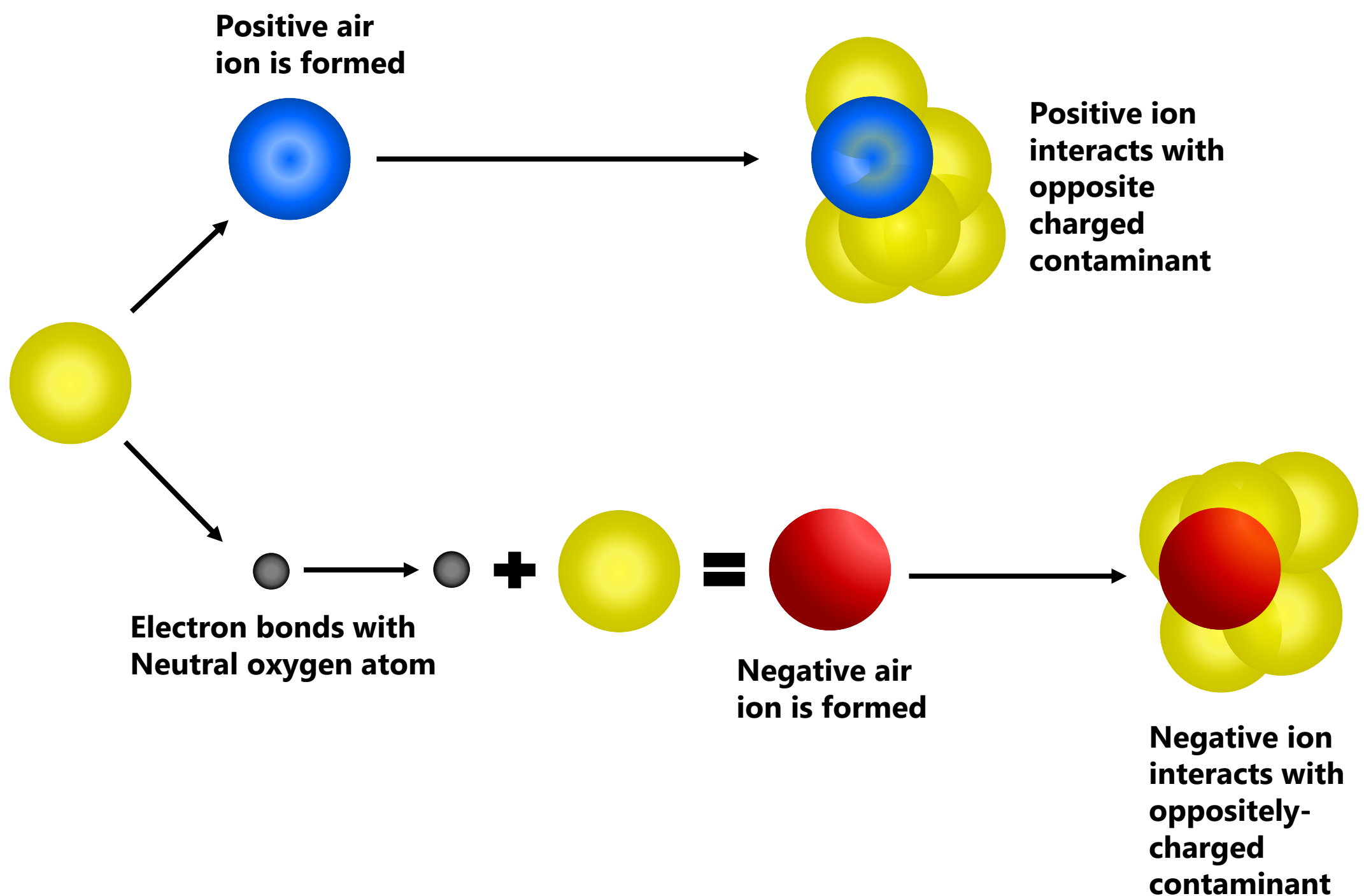
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Crystal Clean Air™ Concentrated Biogenic Ionization Solutions

How Does Our Patented Bi-Polar Ionization Work

Negative ions contain an extra electron, while positive ions are missing an electron. As a result of the electron mismatch, ions are inherently unstable, and in turn, quickly seek out atoms and molecules with which to exchange electrons such as pathogens. During the **Crystal Clean Air™** ionization process, an electric field is created triggering the air to become separated into positive ions and electrons -- the air is **ionized**. The molecules in the air will dissociate and migrate--that is, travel--to an opposite polarity such as infectious contaminants, thus depriving them of hydrogen.

Crystal Clean Air™ NBPI (needlepoint bi-polar Ionization) technology works to safely clean the air inside commercial and residential buildings by replicating the natural continuation of mother nature's own air purification process. The only difference between **Crystal Clean Air's™** technology and Mother Nature is that **Crystal Clean Air's™** technology does air purification without developing detectable ozone. The patented technology addresses the issues of poor IAQ (indoor air quality) and IEQ (Indoor Environmental Quality) head on with the evolution of a scientific ionization understanding. High concentration of ions are injected directly into the air stream closest to the source and immediately react with compounds such as VOCs, odorous gases, as well as pathogens including bacteria, mold, fungus, and viruses.



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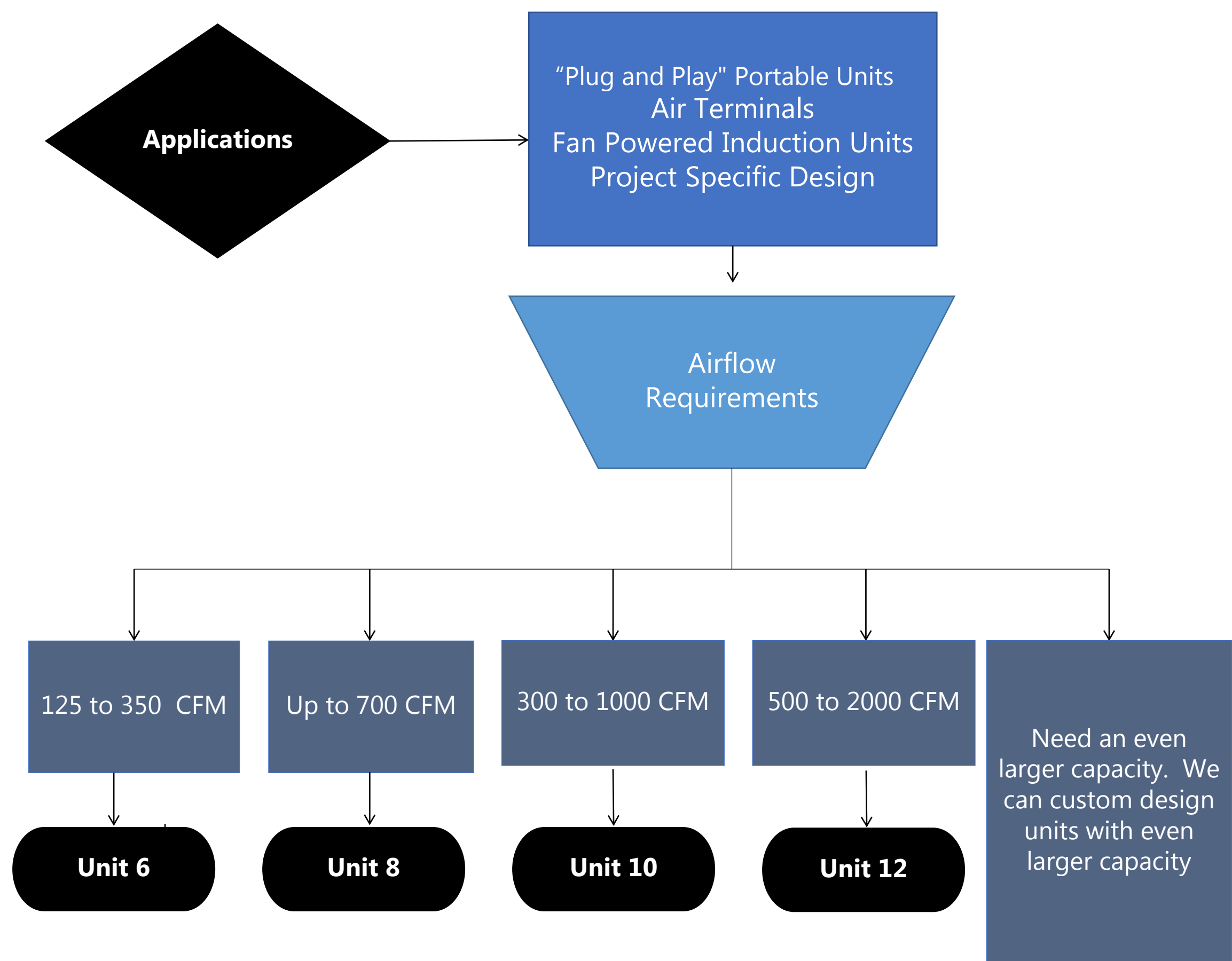
Crystal Clean Air™ Concentrated Biogenic Ionization Solutions

Applications

The **Crystal Clean Air™** is the solution for new and existing infrastructure by neutralizing the contaminants at the source where human interaction occurs. We offer both **Crystal Clean Air™** technology in our engineered standalone units in our innovative air terminal units and project specific designs. As we know, people are the biggest contributors in spreading contaminants, viruses, and other types of bacterial infections. The simple sneeze is passing contaminants to others within that confined space such as an elevator, waiting area, public transportation, and the office conference room. By ionizing the air right before it enters the room or directly at the source, our units purify the air at a much larger magnitude and greatly reduces the spread of VOCs, virus, and other contaminants in a dynamic environment. The idea of ionizing the air in a typical air handling unit loses its overall effectiveness only cleaning a small portion of the air in the area you breathe.



Product Selection Guide



- Crystal Clean Air portable “Plug and Play” Concentrated Biogenic Ionization units are available from 100 – 4000 cfm with the following features:

 - Unique stand-alone design allows for optimal indoor air purification location directly at the source
 - Optimized Space Air Optimization outlets with enhanced air entrainment patterns and superior
- total air movement for complete and continuous room coverage.

 - Can be mounted in a vertical, horizontal position or hung with aircraft cables directly over an area such as a bar, restaurant dining areas, etc.
 - Available from 100 to 4000 cfm
 - ECM (Electronically Commutated **Motor**) allows for
- varying air entrainment velocities with its variable speed operation

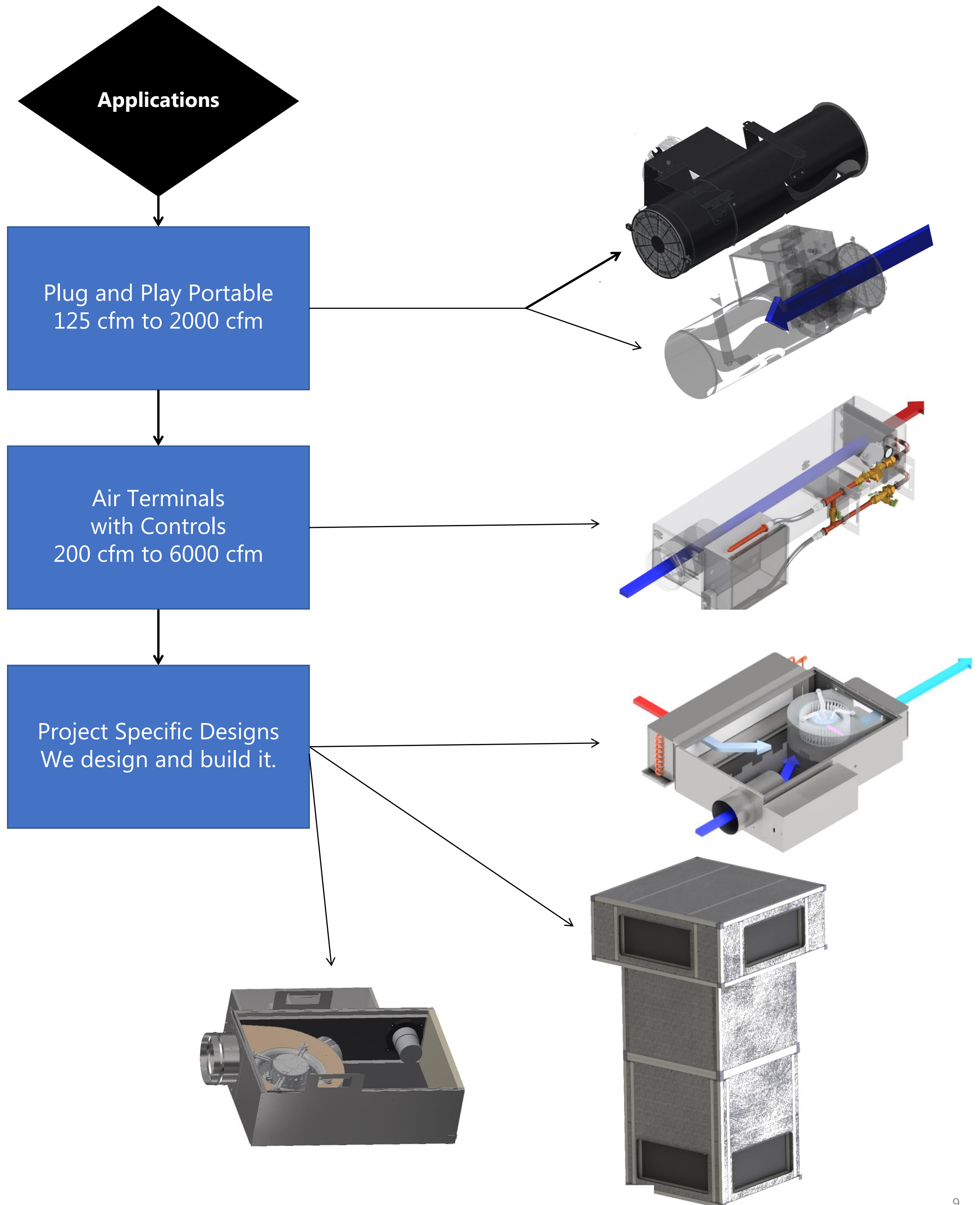
 - Available in 120/240/277volts
 - Low energy usage
 - Plug and Play units for simple installations
 - Industrial grade construction and UL certification.
 - Manufactured in The USA by a WOSB

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