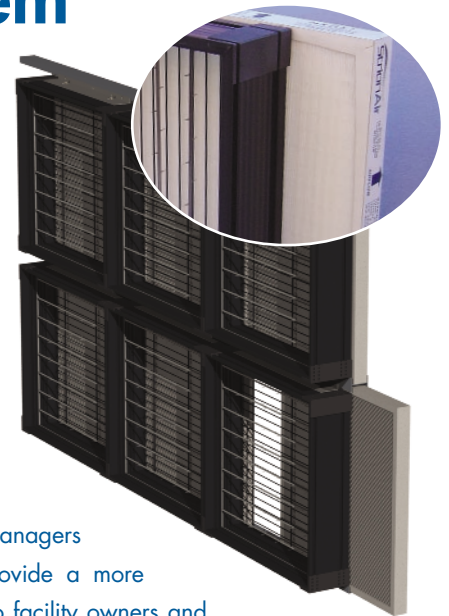




# Introducing the world's only Germicidal, High Efficiency, Low Pressure Air Filtration System That pays for itself

**B**reakthrough Technology StrionAir, Inc. manufactures a low cost, patented, breakthrough air-filtration technology that is technologically superior to existing systems while also rendering them cost ineffective. Based on pioneering research performed by Lawrence Livermore National Laboratory and commercialized by StrionAir over the past ten years, StrionAir has created the industry's first germicidal, high efficiency, low pressure air-filtration system. StrionAir's GC Filter provides these benefits at extremely low operating costs and in a form that can be retrofit into virtually any HVAC system. No other high-efficiency filtration system available today can deliver more than one of these benefits.

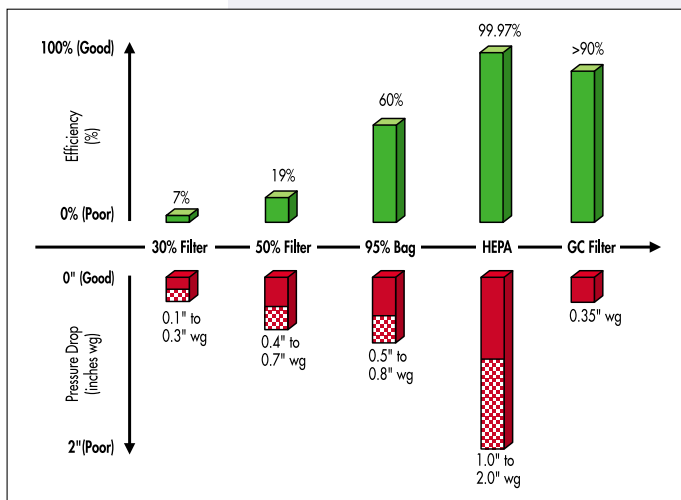


StrionAir's GC Filter provides a **compelling ROI**, a short payback period and enables facilities managers to **reduce operating costs, protect building occupants** from airborne threats and provide a more **comfortable, productive work environment**. The technology delivers additional benefits to facility owners and managers concerned with proactively addressing today's most important and litigious **indoor-air-quality** challenges including: biological- and radiological-related terrorist threats, **sick building syndrome** and nosocomial (hospital-acquired) infections.

## Unmatched Performance

The GC Filter is the first air-filtration product capable of delivering very high particle collection efficiencies against all particle sizes—including sub-micron levels—at very low resistance to airflow.

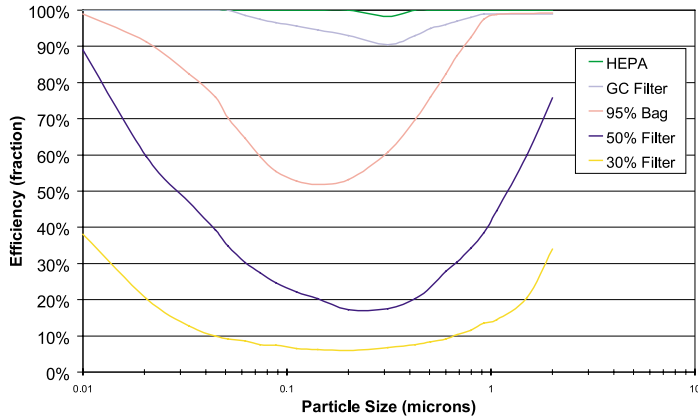
As the chart illustrates, the GC Filter overcomes an historical compromise in mechanical air-filtration. Traditionally, as filtration efficiency (green bars) increases, pressure drop (red bars) also increases. However, the GC Filter's patented technology overcomes this paradigm—delivering exceptionally high filtration efficiency at very low pressure drop. In fact, the GC Filter provides the highest level filtration efficiency available at commercially acceptable pressure drop.



← **The GC Filter Delivers  
High Filtration  
Efficiency At Low  
Pressure Drop**

*[All measurements are at 0.3 micron and @ 500 FPM using common commercial filter sizes]*

The graph below documents the GC Filter's filtration efficiency at particle sizes from 0.01 micron to 2 microns. The GC Filter's performance is shown against a graph of demonstrated filter benchmarks.<sup>8</sup> As the graph shows, the GC Filter delivers extremely high efficiencies at all particle sizes. A 95% bag filter will leave up to 8 times more particles in the air than a GC Filter.



## Superior Germicidal Effect

The GC Filter's germicidal effect has been confirmed by the *Center for Biological Defense* (CBD), a Tampa, Florida laboratory that conducts biodefense research for the National Center for Countermeasures to Biological and Chemical Threats. CBD determined that the GC Filter can capture 100% of the weapons-grade *Anthrax* surrogate *Bacillus atrophaeus*, and kill 99.9999% of those captured organisms.

Additionally, *LMS Technologies*, a specialized filtration testing laboratory in Minnesota, has confirmed that the GC Filter has a 99.9999% kill rate against *Staphylococcus* (a gram positive bacteria responsible for many upper respiratory infections) and *Serratia Marcescens* (a gram negative bacteria that can cause pneumonia). These results indicate that the GC Filter can be an important ally in combating Sick Building Syndrome in any facility and deadly and costly nosocomial infections in hospitals.

## FEATURES, ADVANTAGES & BENEFITS

FEATURES	ADVANTAGES	BENEFITS
<p><b>High Performance Filtration</b> ASHRAE 52.2 MERV 15 @ 500 FPM† and MERV 16 @ 400 FPM</p>	<ul style="list-style-type: none"> <li>■ A 95% bag filter will leave up to 8 times more particles in the air than a GC Filter</li> <li>■ Cleaner heating &amp; cooling coils</li> <li>■ Improves IAQ &amp; employee productivity &amp; safety</li> </ul>	<ul style="list-style-type: none"> <li>■ Safer, cleaner environment for people, processes &amp; equipment</li> <li>■ Helps recover up to \$13/sq.ft./yr in lost employee productivity due to poor air filtration*</li> <li>■ Lower operating costs &amp; greater heating &amp; cooling efficiency</li> </ul>
<p><b>Low Pressure Drop</b> 0.35" w.g. @ 500 FPM (initial pressure)</p>	<ul style="list-style-type: none"> <li>■ Reduced energy to move air versus other high-efficiency systems (e.g., bag filters)</li> <li>■ Increases air flow &amp; air exchanges</li> </ul>	<ul style="list-style-type: none"> <li>■ System pays for itself in operating savings</li> <li>■ Increased air exchanges improve comfort</li> </ul>
<p><b>Germicidal Effect</b> Independent third-party labs have proven a kill rate of &gt;99.99% for weapons grade Anthrax surrogate,†† Gram Positive Bacteria, Gram Negative Bacteria and Viruses‡</p>	<ul style="list-style-type: none"> <li>■ Most filtration systems have no active germicidal effect</li> <li>■ Germicidal effect superior to UV lights</li> <li>■ Improved IAQ</li> </ul>	<ul style="list-style-type: none"> <li>■ Improves health &amp; safety of environment by removing &amp; killing harmful pathogens</li> <li>■ First line of defense for bioterrorism, sick building syndrome &amp; nosocomial illnesses</li> <li>■ Improved employee productivity &amp; reduced absenteeism</li> <li>■ Safe filter removal &amp; disposal</li> </ul>
<p><b>High Filter Loading &amp; Arrestance</b></p>	<ul style="list-style-type: none"> <li>■ Longer filter life (fewer filter changes)</li> <li>■ Less shedding of particulate at filter changes &amp; at system start up</li> </ul>	<ul style="list-style-type: none"> <li>■ Reduced operating &amp; maintenance costs</li> <li>■ Improved IAQ &amp; employee productivity*</li> </ul>
<p><b>Environmentally Friendly</b></p>	<ul style="list-style-type: none"> <li>■ For every 500,000 sq. ft. of building space                             <ul style="list-style-type: none"> <li>&gt; Up to 1.1 Gigawatt Hours energy reduction per year</li> <li>&gt; Up to 1,200 fewer tons of CO<sub>2</sub></li> <li>&gt; Equal to planting 1,470 acres of trees</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Cleaner environment</li> <li>■ Compliance with government mandates</li> <li>■ Civic accountability</li> <li>■ Public statement of Corporate Responsibility</li> </ul>
<p><b>Easy Installation</b></p>	<ul style="list-style-type: none"> <li>■ System easily retrofits into virtually any air handler</li> </ul>	<ul style="list-style-type: none"> <li>■ Low-cost installation</li> <li>■ Many possible applications</li> </ul>

## How it Works

The StrionAir GC Filter's patented technology combines the best elements of ionization, electrostatics and mechanical filtration in a patented way that provides the only practical solution to high-efficiency filtration at low pressure drops. The result is a simple, safe and effective product that uses disposable media and can be installed economically in virtually all air handlers or HVAC systems.

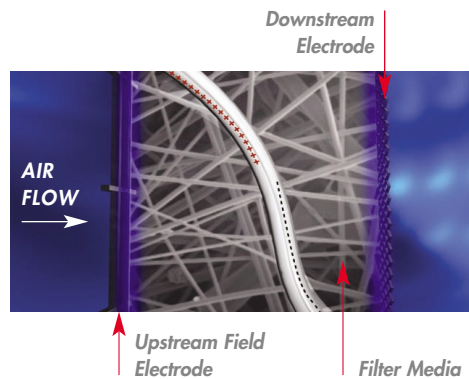
The GC Filter electrically enhances a mechanical filter resulting in >90% filtration efficiency at the submicron level (ASHRAE 52.2, E1) at an initial pressure drop of only 0.35" w.g. @ 500 FPM. At reduced airflows, it can achieve even greater filtration efficiencies.

As contaminated air moves into the GC Filter unit it passes through an *Ionization Array* (below). A negative voltage applied to this array generates an energized field that creates a whirlwind of collisions among air molecules, producing a cloud of negative ions. These ions attach themselves to airborne particles, lending them a negative charge as they continue on towards the *Disposable Filter Element*.

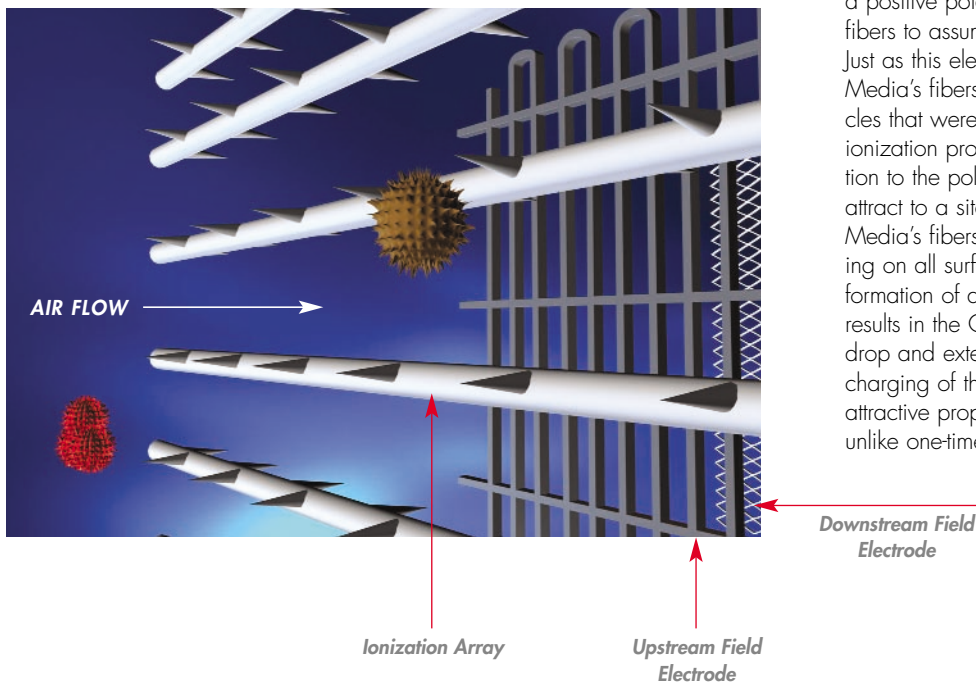
→ A filter fiber is seen polarized in the electrostatic field

↓ Airborne particles pass through the ionization array.

The Filter Element's media is sandwiched between a negatively charged *Upstream Field Electrode* and a grounded *Downstream Electrode* that together create a continuous electrostatic field across the *Filter Media* (below). The Upstream Field Electrode is electrically insulated, which eliminates electrical arcing between the two electrodes and prevents loss of electrostatic efficiency and the creation of harmful levels of ozone.



The electrostatic field creates a polarization of the Filter Media's fibers, causing the side of the fibers facing the negative electrode to assume a positive polarity and the opposite side of the fibers to assume a negative polarity (above). Just as this electrostatic field polarizes the Filter Media's fibers, it also polarizes airborne particles that were not negatively charged in the ionization process. This enhances their attraction to the polarized filter fibers. Particles now attract to a site of opposite charge on the Filter Media's fibers, forming a tightly packed coating on all surfaces. This process inhibits the formation of dendrites, or particle chains, and results in the GC Filter's long-term low pressure drop and extended filter media life. Continuous charging of the fibers constantly renews the attractive properties of the collections sites, unlike one-time-charged electrostatic filters.



<sup>§</sup> Ensor DS, Hanley JT, Sparks LE [1991]. Particle-size-dependent efficiency of air cleaners; Washington D.C.: IAQ 1991, Healthy Buildings/IAQ, pp. 334–336.

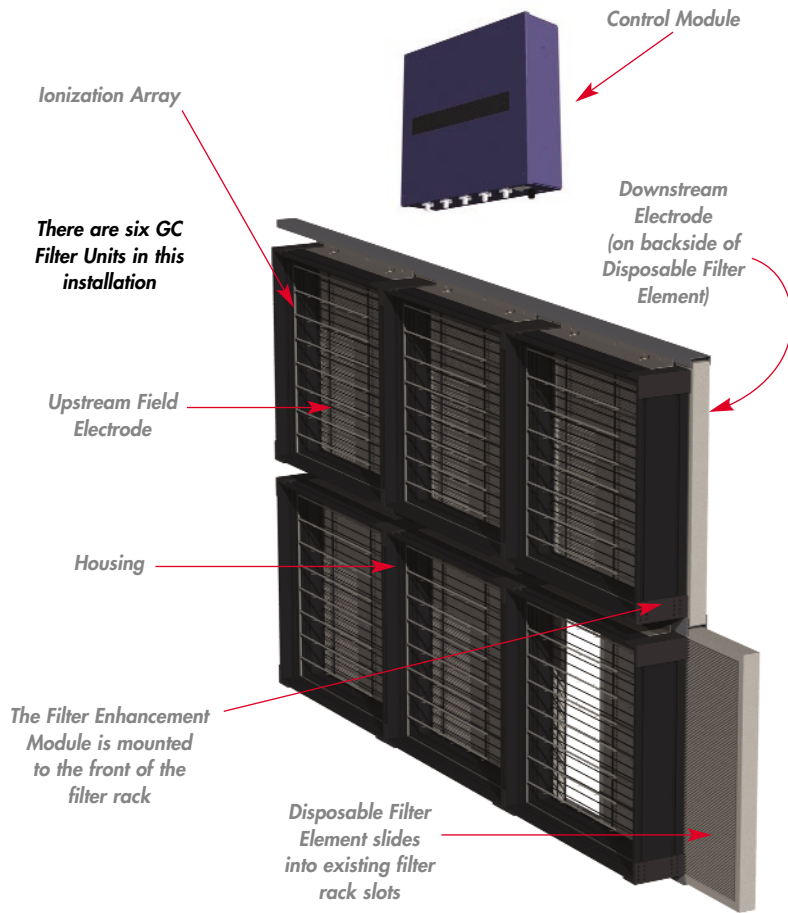
<sup>†</sup> Research Triangle Institute

<sup>††</sup> Center for Biological Defense

<sup>¥</sup> LMS Technologies, Inc.

<sup>\*</sup> Derived from US Bureau of Labor & Statistics, Indoor Air Quality by Ed Bas, and Health Buildings International.

<sup>Ω</sup> Data is provided as a reference only. StrionAir is committed to ongoing product development and improvement. We reserve the right to change designs and ratings without further notice.



## System Configuration

The GC Filter is designed to replace existing filters within an HVAC system's filter rack, allowing it to be deployed economically in virtually any existing air-filtration application. Standard GC Filter sizes include 24" x 24", 24" x 20", 24" x 12", 20" x 20" and 20" x 12".

A typical installation consists of one or more GC Filter Units, each composed of a Disposable Filter Element and a Filter Enhancement Module. The Disposable Filter Element is composed of the Filter Media and Downstream Electrode and is a disposable item, like any other mechanical filter. The Filter Enhancement Module is contained within a supporting housing and is composed of the Ionization Array and the Upstream Field Electrode. An installation also consists of one or more Control Modules that provide electrical power and control features to GC Filter Units. Control Modules can be connected to a building automation system, to which operational status information is communicated. Control Modules require access to a 110V AC circuit.

## Engineering Data<sup>Ω</sup>

There is no alternative air-filtration technology that can match the GC Filter's filtration efficiency at commercially acceptable pressure drops, its low operating costs, its active germicidal effect and its easy retrofit into existing HVAC systems.

	ASHRAE 52.1		ASHRAE 52.2		INITIAL PRESSURE DROP	
	Filter Depth	Dust spot	Arrestance	MERV @ 0.3 Microns	@ 500 FPM	
GC Filter	2"	> 95%	>99	15 - 16	>90%	0.35" w.g.
HEPA	24"	N/A	N/A	N/A	99.97%	1.0" w.g.
HEPA	12"	N/A	N/A	N/A	99.97%	2.0" w.g.
95% bag	15"	90 ~ 95%	>98	14	~60%	0.5" ~ 0.8" w.g.
50% filter	2"	45 ~ 50%	>90	9	~19%	0.4" ~ 0.7" w.g.
30% filter	2"	25 ~ 30%	>90	7	~7%	0.1" ~ 0.3" w.g.

### GC FILTER ENHANCEMENT MODULE

Model	Nominal Dimensions (wxhxd in inches)	Actual Dimensions (wxhxd in inches)
GC-2424A	24 x 24 x 5	23.375 x 23.375 x 5.125
GC-2420A	24 x 20 x 5	23.375 x 19.375 x 5.125
GC-2412A	24 x 12 x 5	23.375 x 11.375 x 5.125
GC-2020A	20 x 20 x 5	19.375 x 19.375 x 5.125
GC-2012A	20 x 12 x 5	19.375 x 11.375 x 5.125

Custom sizes are also available