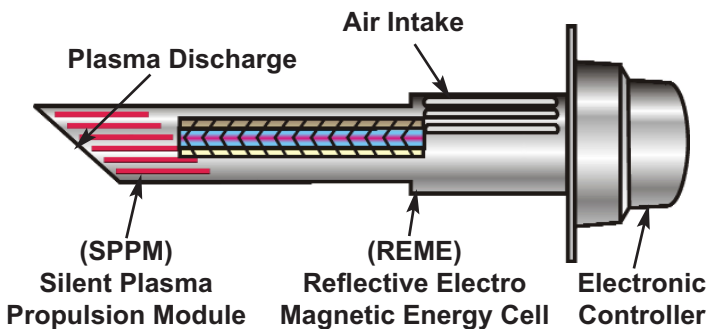


# REME™ Technology by RGF Environmental

REME or Reflective Electro Magnetic Energy utilizes an electro magnetic energy cell to create ionized hydro peroxides™, a friendly oxidizer plasma made from oxygen and humidity. This air purifying plasma is propelled into the HVAC duct or plenum by a silent plasma propulsion module that has no moving parts, yet propels the plasma at 2 cfm. This provides for fan or blower-less operation on a 24-hour basis. The purifying plasma will be propelled through the ducts whether the fan or blower is on or not. This permits a hard-wire 110 volt plug-in installation that lets the REME run 24/7 without wiring to the fan/blower circuit.

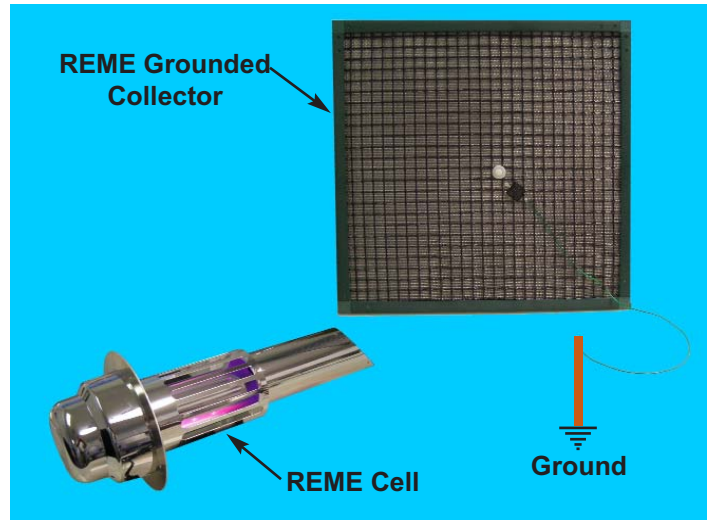
The REME+ cell incorporates a device that uses high voltage to ionize, or electrically charge, molecules of friendly oxidizers. REME can generate specifically charged ions (all positive or all negative) in the air, or it can create both polarities indiscriminately. During operation the REME HVAC Cell is designated to generate primarily negative ions (particles that temporarily contain an extra electron, causing the entire molecule to possess a negative electrical charge) as well as



a mix of positive ions that other particulate matter are attracted to (similar to static electricity). It cleans the air by charging airborne oxidized particles. These charged airborne oxidized particles have an affinity to combine together due to this charging effect, which in turn creates larger, heavier combined particles, which are more easily collected and have been inactivated by the friendly oxidizers on both the REME charged collector media and to a lesser effect, on more conventional types of filtration media.

REME Silent Plasma Propulsion Module (SPPM) is an electrohydrodynamic device that produces thrust in the air using electrical energy without moving parts. When the emitter is charged with high voltage, it causes nearby AOP molecules to become ionized. There are hundreds of thousands of friendly oxidized molecules per second ejected from the device, so the force or thrust exerted is comparable to a 2 cfm fan.

The REME+ Grounded Collector is a reusable/washable low-pressure drop (0.125" WC) intake collector intended to capture charged airborne particulates. It is constructed as a laminate consisting of an external support grid, which contains multi layer polymers and metal alloys. A charge dissipation layer is integrated into the collector core and it is



mechanically connected to earth ground via a regulation circuit which continually dissipates the positive electrical charges accumulated on the collector surface.

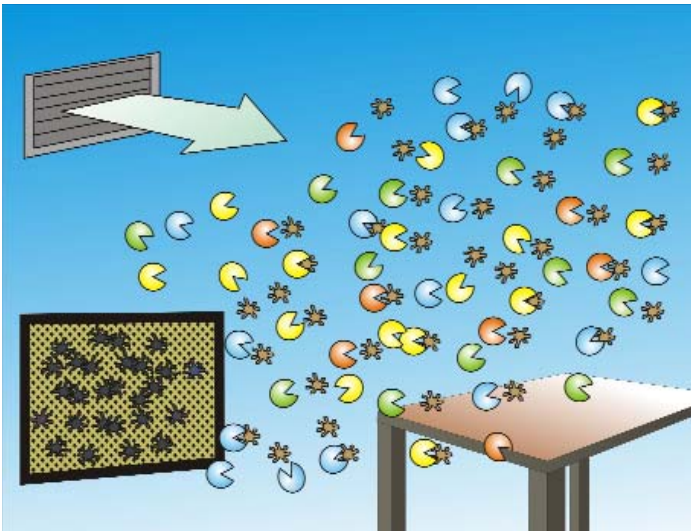
The collector acts as a grounded electrostatic panel, using the accumulated electrostatic charges to attract oppositely



**REME filter media custom cut to required size**



**REME unit in duct**



**Aggressive Advanced Ionized Oxidation Plasma destroys airborne and surface pollutants at the source.**

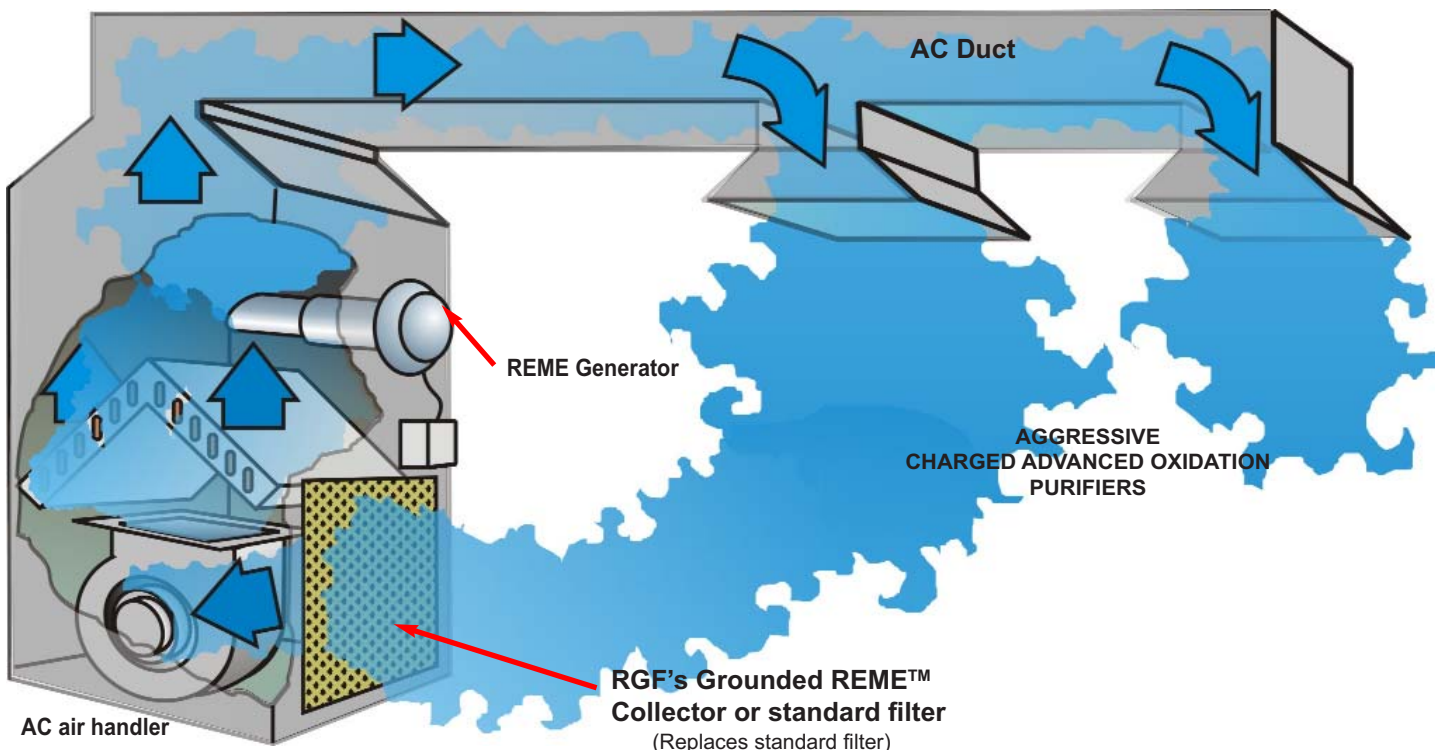
charged particles in the airstream. The static electricity is created by the air as it flows through the filter media core which is made of precharged electrets (materials carrying a permanent positive or negative electrical charge). The theory of operation has to do with the process of triboelectric charging, resulting in one object gaining electrons on its surface, and therefore becoming negatively charged, and another object losing electrons from its surface, and therefore becoming positively charged.

Air tends to charge positively. As air flows past the collector, it tends to become more positive, the filter materials more negative, leading to a regenerative charging effect. This, in turn, continuously renews the materials static charge allowing it to attract oppositely charged contaminants within the airstream. As the filtered or processed air flows past the

grounded core, the excess positive charges are drawn out of the collector due to the natural differential created by the earth ground connection, thus leaving the airstream with a neutral charge. By enhancing the charge of the collector, via extracting the charged ions formed by the moving air passing through the multilayer core, and then controlling the discharge rate of these to ground, the collection material carries a higher state of charge than would be normally possible, and results in an increase in their effectiveness of attracting and holding charged airborne particulates. As the air flows past the REME generator, we then introduce a large amount primarily negative charged ions with an associated lower amount of positively charged ions being formed via the AOP process, thereby also increasing the net charge of the particles in the air, causing them to not only increase their attraction to the REME collector (up to a 93% reduction), but also increasing their chance of being trapped by more conventional filters as well (up to 73% reduction).

The RGF Advanced Oxidation Technologies is a group of oxidants known as Hydroperoxides. Hydroperoxides have been a common part of our environments for over 3.5 billion years. Hydroperoxides are created in our atmosphere whenever three components are present: oxygen molecules, water vapor and energy (electromagnetic). REME+™ also has the ability to supercharge these hydroperoxides or ionize them into Ionized-Hydro-Peroxides™.

Ionized-Hydro-Peroxides™ are very effective at destroying harmful microbials in the air and on surfaces. As oxidants, they do this by either destroying the microbe through a process known as cell lysing or by changing its molecular structure and rendering it harmless (which is the case in VOC's and odors). The amount of hydroperoxides required



to accomplish this task in a conditioned space is well below the level that is constantly in our outside air. The Advanced Oxidation Technology found in RGF's Guardian Air product family has brought the oxidants found in the outside air into the conditioned space of your home. Hydroperoxides could be viewed as nature's air purifiers. There is no known case of hydroperoxides ever creating a

health risk. Considering we have been exposed to hydroperoxides in nature since the day man stepped on the planet, it is a reasonable assumption that hydroperoxides do not constitute a health risk. Over the past 20 plus years, RGF has more an one million Advanced Oxidation products successfully used worldwide without a safety problem.

## Validation Summary

RGF first developed its Advanced Oxidation Technology over 20 years ago. Over 1 million RGF Cells are in use around the world. RGF has licensed its technology to many Fortune 500 companies for use in the medical, food, military, residential, commercial, marine, hospitality and government, etc. RGF cells in various products have been tested and approved by:

- UL, ETL, TUV, EU, EPA & CSA
- U.S. Military
- Electric Power Research Institute
- Chinese Government
- Japanese Government (TV commercials)
- Canadian Government
- U.S. Government – GSA
- European Union

In addition, RGF cells have been specified in the Norovirus & MRSA protection plan of America's largest restaurant chains, hotel chains, theme parks, cruise lines, public schools and hospitals. The following is a summary of some of the testing and studies performed by third party independent labs and universities.

### Sneeze Test - REME

A testing protocol concept was used which included a "Sneeze Simulation Machine" and "Sneeze" chamber. A sneeze can travel at up to 100 mph, so we had to consider lung capacity, sneeze pressure, and liquid volume to properly simulate a human sneeze. This was accomplished and the test proceeded with outstanding results. An average of 99% reduction of microbials was achieved with REME in a double blind test, at 3 feet from the sneeze source. This is clearly not a medically supervised test or protocol. However, from a practical point, it was definitely providing some kill at the source and will provide some level of protection.

Tested by: Kansas State University, inactivation 99%



- Norwalk Virus - 99+% Inactivation
- MRSA Bacteria - 99+% Inactivation
- Streptococcus - 96+% Inactivation
- Pseudomonas - 99+% Inactivation
- Listeria - 99+% Inactivation
- Escherichia Coli - 99+% Inactivation
- Bacillus Globigii - 99+% Inactivation
- Staphylococcus Aureus - 99+% Inactivation
- Streptococcus Pneumoniae - 99+% Inactivation
- Bacillus spp. - 99+% Inactivation
- Stachybotrys chartarum - 99+% Inactivation
- Candida albicans - 99+% Inactivation
- Odors Cleaning Chemicals - 55+% Inactivation
- Odors Pets - 72+% Inactivation
- Odors Perfume - 63+% Inactivation

- Odors Toluene - 29+% Inactivation
- Odors D-limonene - 98+% Inactivation
- Odors Methyl Ethyl Ketone - 13+% Inactivation
- Odors Smoke - 70+% Inactivation
- Mold - 97+% Inactivation
- Yeast - 90+% Inactivation
- Hydrogen Sulfide - 80% Inactivation
- Methyl Mercaptan - 100% Inactivation
- Carbon Disulfide - 30% Inactivation
- Butyl Acetate - 100% Inactivation
- Methyl Merthacrylate - 100% Inactivation
- Formaldehyde - 90+% Inactivation
- Food Surface Microbials - 99% Inactivation
- Surface Bacteria / Virus - 99+% Inactivation
- Particulate Removal - ISO Class 3 in 24 hrs

# About RGF



Customer Service Award.

## Innovation

Since 1985 RGF has maintained a steady flow of award winning innovative pollution solutions. RGF has been awarded national recognition as a recipient of the Inc./MCI



environmental law. Our AutoCAD service provides fast, accurate designs.

## Design

Our technical staff consists of the following specialists: biological, mechanical, chemical, waste treatment, construction engineering, nuclear, fabrication, design, and



## Patented Technology

RGF has been a leader in patented Environmental Technology.



## Advanced Oxidation

RGF has been a leader in Advanced Oxidation technology since 1985. We developed an advanced catalytic oxidation system for total organic oxidation. Our Photohydroionization process has been approved by

the USDA / FDA / FSIS for food processing.



RGF manufactures over 500 environmental products

## Benefits

By utilizing the latest state of the art sanitation technology, RGF provides a media recognition event for positive press. By taking a proactive approach you may be eligible for insurance rate reductions and you will be adding value by providing a safer product.



## R & D

RGF maintains a Research and Development staff that is involved in EPA / USDA / FDA / EPRI and University Environmental Studies. Our staff continuously develops system improvements and new products. RGF personnel have been published in over 70 national journals and textbooks.



## Custom Applications & Components

RGF's award winning engineering team custom designs systems for wastewater recycling, ozone, pesticides, marine, and laundry treatment.



## Lab

RGF maintains a state-of-the-art analytical lab, which will provide free water testing for as long as you own your RGF system to assure continued performance. This assures our customers that, should your waste stream change, you will be able to make the appropriate modifications to meet your needs.



## Envision

The "World's First Environmentally Friendly Mega Yacht" serves as a working showroom for RGF's Advanced Oxidation products.



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