PERFECT AIR SOLUTIONS

AIR PURIFICATION & DESTRATIFICATION TECHNOLOGY

DO YOU KNOW THE DIFFERENCE BETWEEN POPULAR RETAIL SOLD AIR PURIFIERS AND THE ONES WE SUPPLY?
IT COMES DOWN TO THE TECHNOLOGY; ACTIVE VS PASSIVE!

This document explains the science behind the two technologies so you can ensure you make the right decision!

A LITTLE BIT ABOUT US AND OUR COMPETITORS

At Perfect Air Solutions, our Air Purification solutions use Active technology, a patented design from RGF Technology who have over 5 million installations worldwide!
It's tried and tested for 20 years! We are specialists in providing solutions for both domestic and commercial buildings. Our technology replicates natural outdoor fresh air, indoors!

RGF® ENVIRONMENTAL GROUP, INC.

Some of the largest brands supplying Air Purification units use Passive technology (HEPA, PCO, GUV), which require exactly the right conditions to be effective. Some of the brands:

freshia Blueair MORENTO Shark

Homedics lēvoit MEACO PHILIPS

dyson DAEWOO Vent-Axia Vortex AIR

A SIMPLE OVERVIEW OF BOTH TECHNOLOGIES FOR QUICK COMPARISON

ACTIVE OVERVIEW

• RGF Technology's photocatalytic reactions create active molecules.

• Active molecules are hydro-peroxides, super oxides and hydroxide ions.

• The active molecules are released into the air stream that reach into every cubic cm of indoor air space.

• These active molecules continuously break down and destroy viruses, microbials and other organic particulates in the air and on surfaces. They revert back to water vapour and oxygen afterwards.

• RGF Technology treats all of the air and surfaces continuously and in real time. No passive tech works like this!

• Effective for destroying and/or reducing viruses, bacteria, mould spores, odours, dander, pollen and dust in the air and on surfaces no matter where in the room the particulate, pathogen or pollutant is.

• RGF technology drastically reduces the ability of viruses to spread from one person to another. No passive tech can do this!

• Replicates outdoor fresh air which is completely safe to breath, no by-products!

• RGF Environmental Group issued first Zero Ozone Certification for their Air Purification System!

PASSIVE OVERVIEW

• Methods such as HEPA, PCO (Photocatalytic Oxidation) and GUV (Germicidal UV Light) use filtration.

• Filtration is where air is passed through a media (screen, foam or mesh fibre weave) and particulates in the air are captured by the media.

• The effectiveness of particulate capture is dependent on the pore size of the filter.

• Large pore sizes are more effective for large particulates such as dust, dander and pollen.

• Large pore sizes are less effective at smaller “ultra fines” such as road traffic pollution, bacteria, viruses, mould spores and odour molecules.

• The pathogen, pollutant, or particulate must be stationary and/or have passed close to the direct UV-C source and/or through an ionisation field.

• Some systems must draw the pathogens, pollutants or particulates in to the unit and only air close to the unit can be pulled in. Air further away is typically left untreated.

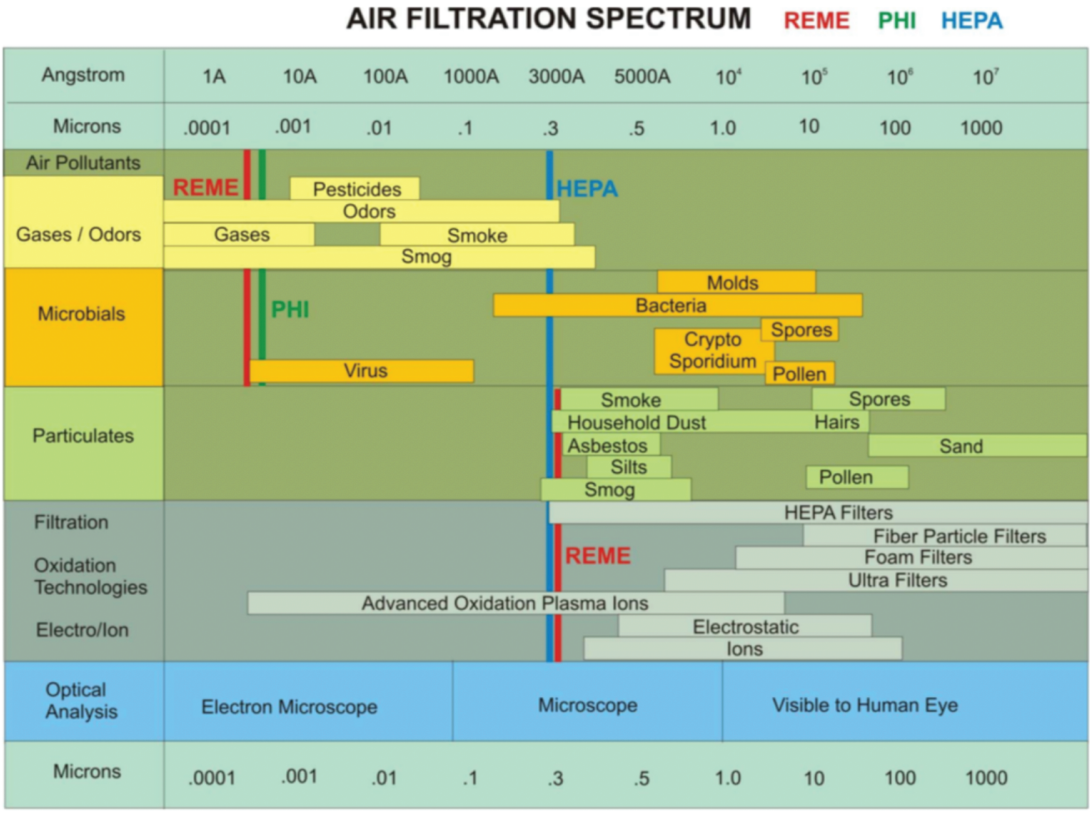
• Ionisation and PCO technologies may produce dangerous/carcinogenic by-products such as Ozone and Formaldehyde in certain conditions.

COMPARISON CHART FOR BOTH ACTIVE & PASSIVE TECHNOLOGY	PASSIVE TECHNOLOGIES										RGF PRODUCTS (ACTIVE)	
	HEPA	FOAM FIBRE	CARBON MEDIA	ELECTROSTATIC PRECIPITATOR	NEGATIVE ION GENERATOR	OZONE	UV	PCO (Photocatalytic Oxidation)	Non Thermal / Cold Plasma (NPBPI)	Hydroxyl Cascades	RGF PHI	RGF REME
Continuously and safely purifies the entire conditioned air and surface space?											✓	✓
Relies on unsafe oxidisers	N/A	N/A	N/A			✓						
Viruses remain in air until passed through unit or by technology	✓	✓	✓	✓	✓		✓	✓	✓			
Process weakens further away from target	N/A	N/A	N/A	✓	✓		✓	✓	✓			
Viruses remain on surfaces until next clean	✓	✓	✓	✓	✓		✓	✓	✓			
Unit becomes a dust collector / breeding ground for bacteria. Health risk when changing filters	✓	✓	✓		✓			✓				
Significant after install maintenance – regular filter changes, cleaning probes	✓	✓	✓	✓	✓		✓	✓	✓	✓		
Dangerous by-products ?	N/A	N/A	N/A	✓	✓	✓	✓	✓	✓	✓		
Allows targets to pass through and back into room	✓	✓	✓	✓	✓		✓	✓	✓			
Energy Efficiency issues (Filters clog + pollutants reenter airstream)	✓	✓	✓					✓				
Unproven/theoretical/impossible										✓		
Allows significant virus transmission risk to remain	✓	✓	✓	✓	✓		✓	✓	✓			

RGF Technology products can be a little more expensive and potentially require installation (for commercial buildings), some domestic products (REME ION) are easier to install, just plug in and go!

REME & PHI = ACTIVE

HEPA = PASSIVE



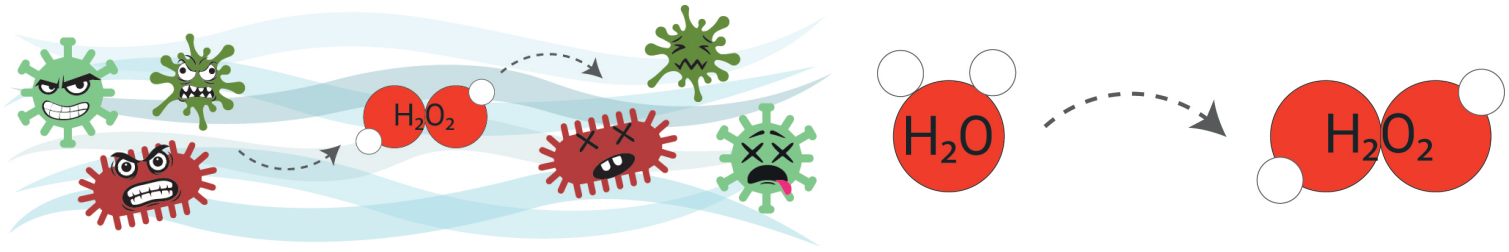
THE SCIENCE BEHIND THE TECHNOLOGIES - IN MORE DETAIL!

ACTIVE: RGF Technology's photocatalytic reactions create hydro-peroxides, super oxides and hydroxide ions into the air stream that reach into every cubic cm of indoor air space.

ACTIVE: These active molecules continuously break down and destroys viruses, microbials and other organic particulates in the air and on surfaces, reverting back to water vapour and oxygen afterwards. RGF Technology treats all of the air and surfaces continuously and in real time. Passive technology does work like this.

ACTIVE: RGF Technology uses particular UV wavelength light shone onto a unique quad metallic composition hydrophillic catalyst which continuously releases safe to breathe concentrations of hydro-peroxide molecules into the air. This 'plasma' is distributed throughout the entire indoor space, continuously sanitising the air and surfaces and ensuring the indoor environment is virtually free of pathogens, pollutants and particulates.

ACTIVE: If somone infected with a virus enters a room/indoor space and they sneeze, cough or touch a surface, any viral emissions would immediately be subjected to this deactivation process no matter where in the room the person is. Consequently RGF technology drastically reduces the ability of viruses to spread from one person to another due to all of the air being treated in real-time!.



PASSIVE: Germicidal UV light (GUV) can be effective at sterilising microbes, dependant on how close the microbes are to the GUV light and how long they are exposed to the GUV light for. In practice due to the "dwell time" needed for microbial deactivation, GUV is only effective on microbes that are stationary ie. captured in a filter and not for microbes that are moving through the air.

PASSIVE: PCO (Photocatalytic Oxydation) typically uses a Titanium dioxide catalyst and UV lamp. The catalyst absorbs the UV energy, electrons are energised so fly off of their outer ring which creates an electron hole. The hole then gets filled by air molecules (Oxygen, Nitrogen etc), this causes a chain reaction in the air components recombining them into unstable arrangements.

PASSIVE: PCO devices typically generate Hydroxyl radicals (1 x Oxygen, 1 x Hydrogen bound together) which means they only have an ultra short life span (nanoseconds) due to their instability. Consequently they cannot travel and do not leave the surface of the catalyst, so only microbes and molecules coming in to contact with them at the catalyst surface will be destroyed.

PASSIVE: True HEPA filters capture 99.97% of all particles down to 0.3 microns (depending on airflow through the filter). Viruses are typically smaller than this. Effectiveness of UV-C and PCO is subject to the Inverse Square Law of Light and require significant dwell time to deactivate stationary viruses, bacteria, mould spores etc. They have virtually no effect on any particle in a moving air stream.

PASSIVE: Ionisation typically causes particles to agglomorate (clump together), making them heavier and causing them to drop out of the air. Particulate deactivation can take long periods.

PASSIVE: Filters require changing/cleaning regularly to keep air stream clean from particulate build up.

RESOURCES

TEST RESULTS

We can provide test results performed on RGF® Advanced Oxidation products with Advanced Oxidation Plasma of less than .02ppm unless noted otherwise. They were conducted by independent accredited labs and university studies. Studies were funded and conducted by RGF®'s major clients to assure third party credibility. Test results can be found here: **www.rgf.com/test-results/**

CASE STUDIES

RGF® has licensed its technology to many Fortune 500 companies (largest corporations in USA) for use in health care, food processing, military, government, marine, hospitality, residential and commercial applications. In addition, RGF®'s AOT cells have been specified in the Norovirus and MRSA protection plan of America's largest restaurant chains, hotel chains, theme parks, cruise lines, public schools and hospitals. We can supply various case studies from the above and from UK installations such as Birmingham City Airport, Lloyds of London, Bupa Care Home etc.

CERTIFICATION & RECOGNITION

In 2020, RGF Envionmental Group was issued the first ever Zero Ozone Certification by Intertek Sustainability for their Air Purification System. Read more here: **www.intertek.com/news/2020/08-12-intertek-sustainability-issues-first-zero-ozone-certification-to-rgf-environmental-group/**

Perfect Air Solutions specialist contractor 'Andrew Hobbs' has been recognised for outstanding contribution to building safety in radon, damp and mould, viral transmission and indoor air and environmental quality in general by winning the prestigious Building a Safer Future Award at the 30th Anniversary edition of H&V News Awards. Andrew assists us with:

Industry-leading damp and mould prevention
Advanced radon detection and mitigation
Comprehensive building safety assessments
Expert consultation and implementation

VISUAL AIDS AND MORE INFO

You can see a video/visual representation of how the RGF Technology works on our website. Please visit: **www.solutionsgroupuk.com/air-solutions/about**

It's also beneficial to view RGF's YouTube Channel to explore many more videos about the technology including reports, commercials/adverts, studies etc - everything you need to know! You can view their channel here: **www.youtube.com/@rgfgroup**