

BETTER

— INDOORS —

Clean Air for Healthy Buildings

# Limitations of COVID Mitigation Measures

Ventilation is important but:

- It can make rooms uncomfortably cold
- It increases energy consumption and cost
- It increases outdoor pollution ingress
- It does not destroy viruses and can in fact help them spread

Active air purification safely avoids these consequences whilst creating environmental protection throughout the air and surface space.

Active air purification destroys viral emissions at the point of transmission. It is impossible for the current measures to achieve this level of protection.

# What is Active Air Purification ?

- Non-chemical process that imitates nature's air cleaning processes indoors.
- **Ionised hydroperoxides** produced from patented photocatalytic reaction (broad spectrum UV/quad metal catalyst) and ambient water vapour reach into every cubic cm of air and surface space.
- Effective across all 3 categories of pollutants – microbials, VOCs/gases/odours and particulates/smoke.
- Breaks down microbials through cell lysing and VOCs/odours by changing molecular structure and rendering cell harmless. Agglomerates particulates.
- **Treats the air and surfaces.** Provides real-time instantaneous and continuous protection against emissions and fomites of common and dangerous viral and bacteria including SARS-CoV-2 anywhere in the indoor space. Kills viruses at the point of transmission.
- Developed over 15 years ago. 35 year old manufacturer. Tested, proven and widely used. Millions of installs in over 60 countries.
- Creates environmental effect. Adds unique extra layer of protection
- Not behaviour dependent
- Creates safer healthier future proofed environments

# Why is our Active technology different ?

A strategic environmental “equilibrium” process that works everywhere simultaneously and continuously. It kills viral emissions at the point of transmission. This is impossible for passive air treatments to achieve this level of protection.

Passives only treat air that passes close or through giving no real time continuous protection elsewhere.

- Viral emissions are alive until removed by ventilation or caught by the system.
- No protection against fomites
- No guarantee of removal when passing by/through

Passive technologies include filtration, UV-C, PCO and ionisation

# Products for any application

- Wall mounted / free standing for areas without HVAC system. Contain fans to help distribute oxidisers throughout space
  - Rooms / Spaces (homes, offices, commercial, food processing etc)
  - Vehicles
  - Lifts
  - Storage Areas
- In-duct / in-unit for integration into HVAC system. Leverages airflows to distribute oxidisers
  - Whole building coverage
- UV Sticks to eliminate organic build-up on filter / AC coils. Maintenance item
- Quadpolar ionisers for particulate agglomeration. Separate or integrated into REME units
- Units for integration into/onto split / PT AC systems
- Portable / mobile units
- Environmental bacteria / odour abatement
  - Waste areas (hotels, restaurants, supermarkets, office blocks)
  - Rubbish chutes (flat blocks)

# Product Range - Summary

Application	Type		Coverage	Ideal for
Wall mounted Standalone (areas with no HVAC system and no split/PT AC)	REME Ion		200 ft2	Cars, lifts, desktops, small rooms Residential & commercial Flats, single storey homes, offices, receptions, basements, hotels, dental, healthcare, schools etc. Residential & commercial and industrial
	HALO ROVE		1,500 ft2	
	Mariner-12 (remaining stock)		800 ft2	
Areas of high organic loading	REME-ATS		12,000 ft2	Food processing & production facilities.
	IMSB		45 CFM	Commercial ice machine systems
In-Duct (any HVAC system buildings, buses, trains, marine vessels, aeroplanes, school buses, ambulances, fire trucks, lorries)	HALO LED		250-6500 cfm	Up to 3.06 m3/sec per unit
	REME HALO		1000-6500 cfm	Up to 3.06 m3/sec per unit
	Guardian QR+		300-18000 cfm	3 sizes according to duct diameter
	Package PHI		250-8000 cfm	3 sizes according to AHU unit/duct size
	ClearSky		2400 cfm	Quadpolar ioniser for particulates. For use with PHI in-duct / AHU units

# Product Range - Summary

Application	Type		Coverage	Ideal for
Split/PT AC Systems (integration into or onto units)	PTAC		250-500 cfm	Fits inside any PTAC unit typically found in hotels, hospitals, care homes etc.
	Mini Split		250-2000 cfm	Fits onto wall or ceiling mounted AC split units
	ClearSky		2400 cfm	Quadpolar ioniser for particulates. Sits atop AC split unit inlets
Portables (plug in units)	Rapid Recovery		88 cfm	Designed to remediate and destroy fumes, odours, mould and mildew in problem areas of unoccupied spaces or to assist daily cleaning/maintenance operations.
	Mobile Pro		32 cfm	
Bacteria & Odour Abatement	BOS HOX		146 cfm	Designed for malodorous areas such as dumpsters, lift stations, trash chutes, waste storage areas, as well as vent stacks in supermarkets, recycling centres, restaurants, hospitals, hotels, care homes



# Better Indoors – Selected Install Photos (wall mounted)





# Better Indoors – Selected Install Photos (in-duct/integrated)



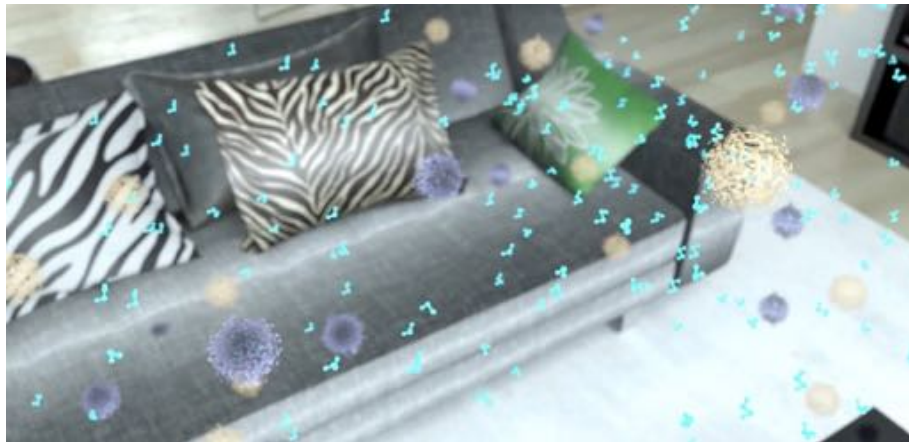
# Key benefits:

- Stops viral R rate increases throughout indoor environments
- Improved IAQ. Improved health & wellbeing
- Reduced illness, HAIs and absenteeism. Improved productivity
- Reduced energy costs. Improved energy efficiency
- Eliminates need/cost of recurrent fogging
- Added layer of protection for frontline NHS/emergency workers
- Creates safer, healthier indoor environments
- Improves staff and customer confidence in indoor spaces
- Products for all types of buildings/HVAC, vehicles
- Quick and easy to retrofit (2-4 weeks)
- Affordable. Lease rental / hire purchase options
- Rapid procurement

# Suggested Use Cases – Urgent Need Now:

- NHS / Healthcare / Dental
- Schools (and School Buses)
- Emergency Services – Police, Ambulances, Fire Trucks
- Supermarkets
- Mass Transit Systems – Buses, Lorries, Trains, Ferries, Aeroplanes, Airport Terminals
- Assisted Living / Care Homes
- Hospitality - Bars / Restaurants / Bowling Alleys / Hotels
- Leisure – Gyms
- Residential
- Commercial Buildings – Private and Public Sector
- Industrial facilities
- Military

# The Technology Inside



Photohydroionisation (PHI) provides instant protection against viral emissions including SARS-CoV-2 and other dangerous pathogens plus VOCs and gases throughout the air and surface.

PHI units can be accompanied by quadpolar ionisation units for particulate control.



Reflective Electro Magnetic Energy (REME) is a more advanced version of PHI with integrated bipolar ionisation for particulate control

- PHI invented in late 1990s. Came to prominence post 9/11 late 2001
- Sandia Labs / Sneeze Machine developed to prove process
- REME invented 2006
- Both technologies are protected by global patent



# Safety

- Units designed to maintain VHP “equilibrium” – 0.02 ppm or 2% of EH40/2005 Workplace Exposure Limit (1 ppm).
- World’s first to comply with UL-867 v5 Verified Zero Ozone by ETL-Intertek. Does not exceed 0.005ppm or 5ppb ozone



- Millions of installations in over 60 countries
- Completely safe. Never a single safety issue

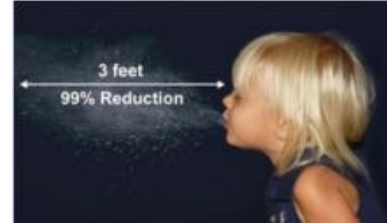
# Efficacy (across all 3 pollutant categories)

(quoted samples from university and independent lab tests and major corporation studies)

- 99.9-99.99% reduction in surface and aerosolized SARS-CoV-2
- 99+% reduction in surface H1N1 swine flu
- 4-log reduction (99.99%) surface bacteria/virus
- 99% of human sneeze microbes killed at 3 feet
- 97% airborne bacteria reduction
- 99% reductions of E-Coli, Listeria, Strep, Tuberculosis, Bird Flu and many others
- 85% odour reduction
- 97% airborne mould spore reduction
- US Military approved for mould protection in field hospitals
- Hospital approvals Infectious Diseases – US and International 99% reduction of Staph (MRSA)
- Major US city school reported 20% reduction in absenteeism
- Tested and approved by the Chinese government in 2003 for protection against SARS-CoV-1
- Fox News 3-part indoor air series featured RGF and concluded substantial mould and bacteria reductions
- RGF's technology has been featured on Fox, ABC, CBS and in Popular Science Magazine
- Cells produce 1 quadrillion ionised VHP molecules every second (100 times more than Panasonic Nanoe X hydroxyl generator (corrosive/by-product risk) and 2.5 million times more than GPS)
- No other technology comes close for reach, efficacy and scalability
- Translates into best value for money

# Testing & Compliance

- RGF pioneered the development of aerosolized microbial testing protocols which remain unique in the world
  - 2006 Sneeze Machine tested by KSU
  - Kills 99% of sneeze germs within 3 feet
- 99.9% reduction in surface and aerosolized SARS-CoV-2.
  - 2020 Innovative Bioanalysis – 8'x20'x20' chamber. Kill rate same at varying distances proving environmental effect throughout chamber
- Tested and approved by
  - ETL Intertek, TUV SUD, CSA
  - US Military
  - Chinese government
  - Japanese government
  - Canadian government
  - European Union (CE markings)
  - Norovirus/MRSA protection plans of US restaurant chains, theme parks, cruise lines, public schools and hospitals





# Simple and easy to specify:

- Review building floor plans and HVAC infrastructure if present
- Understand HVAC strategy of each space
  - No HVAC system = standalone units
  - HVAC system = in-duct units plus standalones for dead areas
- Match unit spec to space size or HVAC airflow
  - Standalones – floor area/volume
  - In-Duct – HVAC airflow
- Plan installation
  - Survey Site
  - Identify installation locations
  - Plan electrical integration requirements
- Place order

# Better Indoors 2020 Selected Use Case Examples

## Bars/Restaurants

- Various Chapman Ventilation (standalones (Mariner/CAPS Mini/CAPS) and in-duct REME units)

## Commercial

- Lloyds of London (All UK estates including iconic 55,000 m2 Lime St EC2 - REME HALO LED)
- Mishcon de Reya (Holborn HQ – 130,000 ft2 10 floors – REME HALO)
- ECO Filters (various clients - Package PHI)
- MGP (HQ – standalone Mariner-12)
- ITW (HQ – standalone Mariner-12)
- Aura Purification Technologies (standalone Mariner-12)
- KVCAyr (standalone and REME HALO LED)

## Dental

- Charlie Ferber – (Wigmore St practice – standalone Mariner-12)
- Hamid Karimi – (Norfolk Dental practice – standalone Mariner-12)
- Zac van de Westhuizen – (Medway Dental – standalone Mariner-12)

## Domestic

- Kevin Hamilton (self builder MVHR – integrated Package PHI into supply distribution box)
- Better Indoors staff (standalones and Guardian QR+ integrated into Loft PIV)
- Aura (standalones)

## Child Care

- Let's Pretend (Package PHI integrated into HVAC system)

# Case Studies

## Lloyds of London



- 4,600 m2 test area – 1 entire floor
- 2 independently run tests
- Random ATP swab locations
- Outstanding results. UK wide rollout
- 97% ATP reduction across 7 test areas in 3 weeks

	Control	72 hours	2 weeks	3 weeks (second party)
Room 569	45	15	7	2
Tower 6	96	7	7	2
Tower 1	44	18	3	2
Tower 4	15	33	3	1
Gallery 5	410	38	12	11
Tower 3				
Meeting Room 547	20	15	15	1

## Mishcon de Reya



- Building wide performed post install
- ATP swab locations
- Outstanding results.
- 66% ATP reduction across 18 test areas in 1 week

Location Name	Test Device	Unit Type	14/01/2021 RLU	21/01/2021 RLU	Difference
A/H Security Control Room Mouse	UltraSnap	EnsureTouch	236	216	20
A/H Security Control Room Keyboard	UltraSnap	EnsureTouch	325	121	204
A/H Security Control Room Fire Panel	UltraSnap	EnsureTouch	579	357	222
A/H Security Control Room Assistant Hat	UltraSnap	EnsureTouch	426	325	101
AH8 Kitchenette Bench	UltraSnap	EnsureTouch	130	44	86
AH4 Kitchenette Bench	UltraSnap	EnsureTouch	78	36	42
AH1 MR5 iPad	UltraSnap	EnsureTouch	32	12	20
AH1 MR5 Chair	UltraSnap	EnsureTouch	193	152	41
AH1 MR5 Table	UltraSnap	EnsureTouch	42	22	20
AH1 Lift 2	UltraSnap	EnsureTouch	152	82	70
AH1 Lift 1	UltraSnap	EnsureTouch	128	85	43
AH1 Kitchenette Bench	UltraSnap	EnsureTouch	169	68	101
AH1 Kitchen Ziptap	UltraSnap	EnsureTouch	391	237	154
AH1 LG Zip tap	UltraSnap	EnsureTouch	603	594	9
AH LG Left Lower Microwave	UltraSnap	EnsureTouch	549	347	202
AH Ground Reception Desk	UltraSnap	EnsureTouch	107	18	89
AH Ground CL Scanomat	UltraSnap	EnsureTouch	13	8	5
AH Ground CL Coffee Bar	UltraSnap	EnsureTouch	21	13	8

# RGF 2020/21 Selected Use Case Examples

## Schools

- St Martin's Episcopal School
- Academy of Our Lady of Peace
- Palm Beach Day Academy
- Penta Career Centre
- Mohawk College

## Healthcare / Dental

- Sunshine Dental
- Atalian Global Illness Prevention Program
- Cayman Islands Health Service Authority

## Mass Transit / Public Transportation

- United Safety / Green Bay Metro System
- United Safety / School Buses
- USSC / Gillig Mass Transit

## Emergency Services

- USSC / Marion County Fire & Rescue / Fire Trucks and Ambulances

## Commercial

- Fisher Brothers (8 million ft<sup>2</sup> in NYC)

## Leisure

- Cyclebar
- Genesis Health Clubs
- Orangetheory Fitness

## Hospitality

- Country Club New Orleans
- South Beach Grille NC
- Sorisso Kitchen
- Marlow's Tavern & Restaurant
- Palms Hotel & Spa
- Swinging Doors
- Madison Beach Hotel
- Newport Restaurant Group
- TGI Friday – all 566 US restaurants

## Hair

- Carbone's Barber

## Libraries

- Rocky River Public Library

# Who We Are

RGF Environmental - a 35 year old world leader in environmental manufacture and innovation

- 500 products (air & water purification, food sanitisation)
- 32 active patents
- 700+ staff
- \$5m+ in new production facilities in 2020
- Global distribution network – 60+ countries
- 500% global sales growth in 2020
- COVID critical manufacturer (US Dept Homeland Security)

## Better Indoors

- UK & NI exclusive distributor to RGF
- Experienced HVAC & IAQ solutions provider
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