






Air & Surface Purification & Desinfection Technologies



Air & Surface Purification & Desinfection Technologies




Agenda

-  Pollution types
-  Technologies – Active Air Purification
-  Technologies
-  Products
-  Markets

Air & Surface Purification & Desinfection Technologies

Objectives

MHA

-  Understand pollution types
-  Understand the performance differences between « Passive » and « Active » air purification technologies
-  How does « Photocatalysis » work?

Air & Surface Purification & Disinfection Technologies

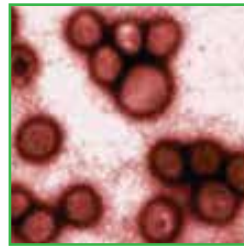
Pollution Types

Organic Pollution

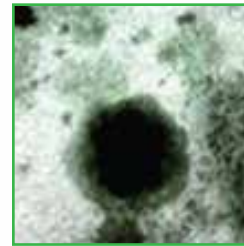
Bacteria



Virus



Mold



VOC (Volatile Organic Components)



Odors



Mineral Pollution

Dust



Acarians



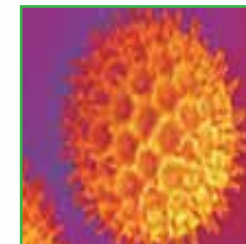
Animal hairs



Smoke



Pollen



Air & Surface Purification & Desinfection Technologies

Active Purification Technologies

PureSEEN use only ACTIVE Purification Technologies

Advanced Photocatalytic purifying plasma

- Destroys all Organic Pollution at a molecular level
- Can be used in presence of humans

Double Ionisation

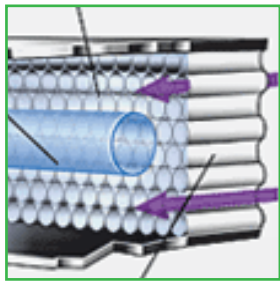
- Agglomerates fine dust particles suspended in the air (PM_{2,5}/PM₁₀)
- These heavier particles will fall to the ground
- This technology works 250 times quicker than gravity

Air does NOT have to pass through the equipment to be purified as in traditional « Passive » air filtration systems.

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Active vs Passive Technologies

Active Technology



Photocatalysis + Double Ionisation

Passive Technology



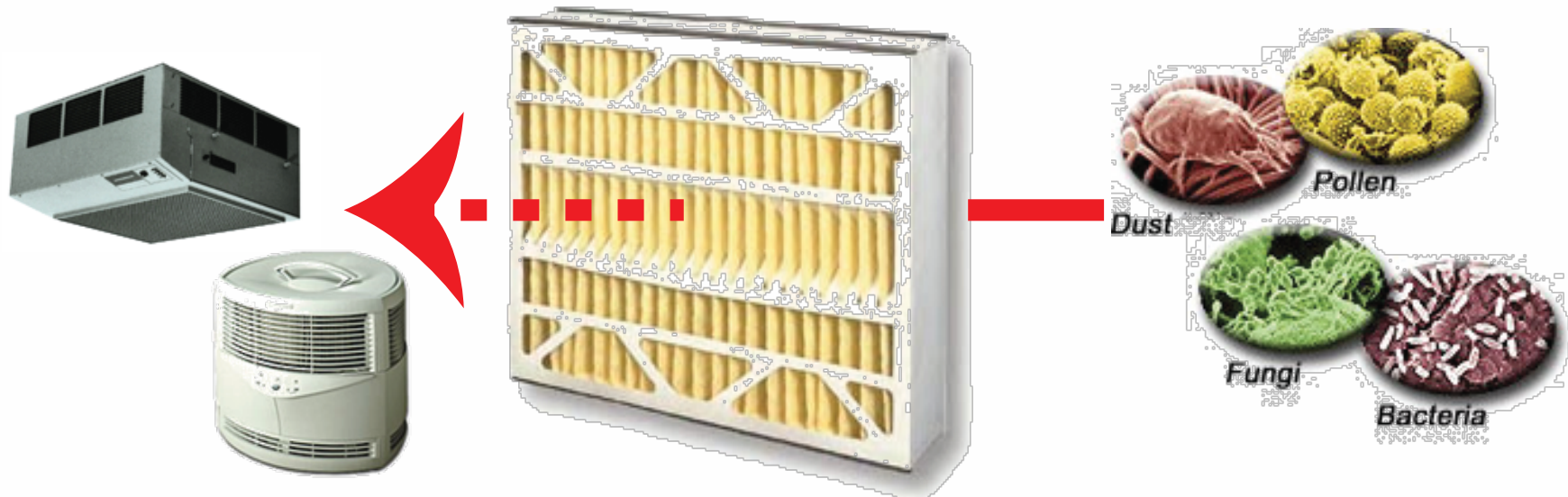
Filters – Hepa, Electronic, UV Lamps, etc...

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Passive Technologies

● Suck the pollution through a filter, **maybe....**

- Filters
- Electrostatic Filters

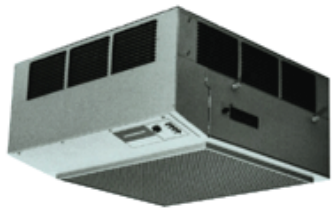


Air & Surface Purification & Disinfection Technologies

Passive Technologies

- Suck the pollution through a filter, **maybe....**

- Filters
- Electrostatic Filters



Can a filter **SUCK**
BACTERIA from a
COUNTER TOP?

From a **DoorKnob?**



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Passive Technologies

DISADVANTAGES

- Big Electric Bill\$

- Does **not** Sanitize.

- Does **not** kill bacteria and viruses.

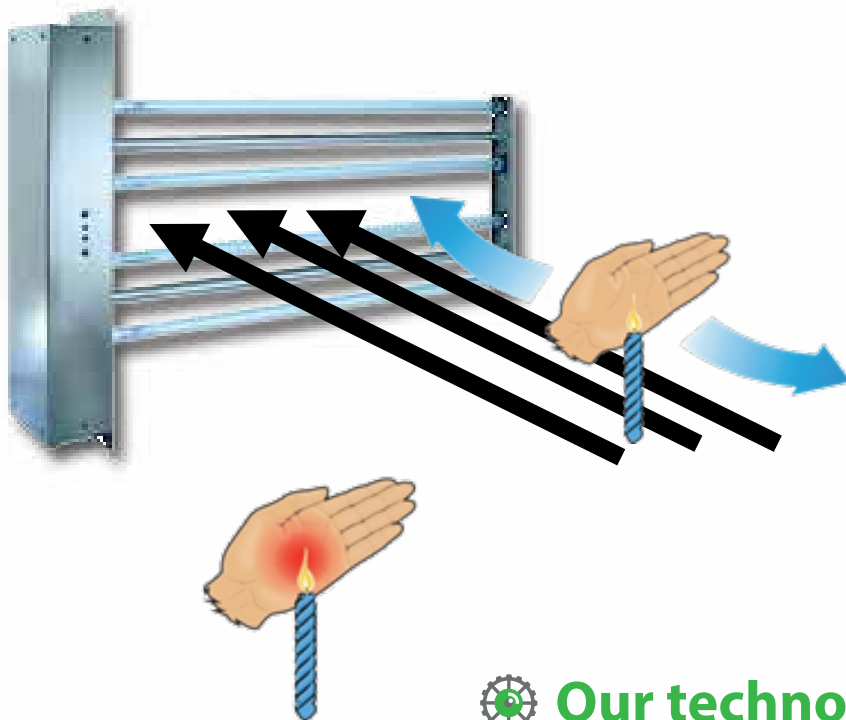
- Filter becomes a **breeding ground** for bacteria, mold, and dust mites.



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Passive Technologies

GERMICIDAL UV LIGHTS



The goal is to get bacteria and viruses to the UV light. However, there are many **IF'S** influencing Germicidal UV effectiveness.

- **IF** you can get the pollutant to the UV light...
- **IF** the time exposure is long enough, there is Questionable Effectiveness.



Our technology is NOT PASSIVE Germicidal UV.

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Passive Technologies

GERMICIDAL UV LIGHTS




The diagram shows a long, cylindrical UV light fixture. Three large blue arrows originate from the fixture: one curves to the left, one points towards the right, and one points towards the bottom right. A red dashed box encloses the fixture and the arrows. Inside this box, the text "TOO FAR AWAY!" and "TOO FAST!" is written in red, with red arrows pointing towards the fixture. A small inset image in the top right corner shows a cluster of white, irregularly shaped particles. Below the fixture, a green gear icon is followed by the text "Our technology is NOT PASSIVE Germicidal UV."

TOO FAR AWAY!
TOO FAST!





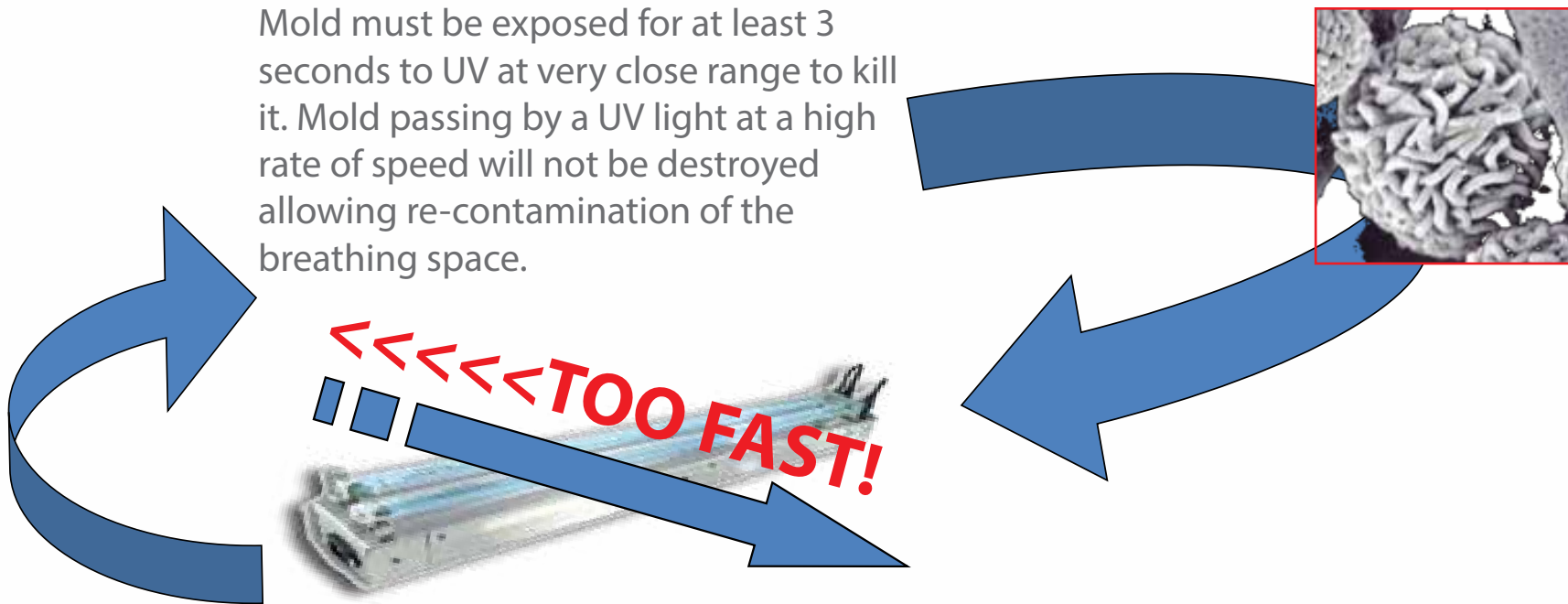
 **Our technology is NOT PASSIVE Germicidal UV.**

Air & Surface Purification & Disinfection Technologies

Passive Technologies

GERMICIDAL UV LIGHTS

Mold must be exposed for at least 3 seconds to UV at very close range to kill it. Mold passing by a UV light at a high rate of speed will not be destroyed allowing re-contamination of the breathing space.



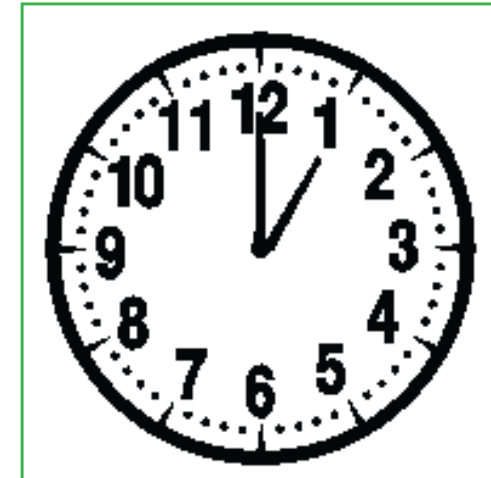
 **Our technology is NOT PASSIVE Germicidal UV.**

Air & Surface Purification & Disinfection Technologies

Active Technology

PHOTOCATALYSIS

Photocatalysis sends out purifying agents to **destroy** allergy causing mold, dangerous bacteria, viruses, and VOC's in the air.

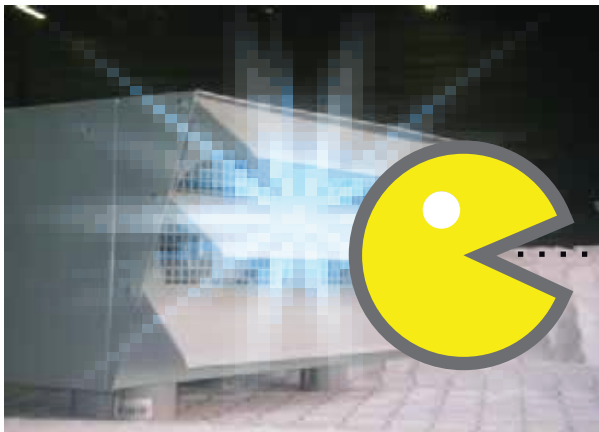


Air & Surface Purification & Disinfection Technologies

Active Technology

PHOTOCATALYSIS

Kills Germs on Surfaces like doorknobs, toilets, kitchen counters, etc..



Air & Surface Purification & Disinfection Technologies

Active Technology

PHOTOCATALYSIS

Photocatalysis Destroys ODORS



- Smoke
- From Bacteria
- Food
- Paints
- Chemicals....



Air & Surface Purification & Disinfection Technologies

Active Technology

PHOTOCATALYSIS - TESTS

Biological reduction through photocatalysis (RCI) on stainless steel surface

- Kansas State Food Science Institute (department of Animal Sciences & industry, Kansas State University).
Dr. James Marsden, Regent's Distinguished Professor of Meat Science

* Staphylococcus aureus, MRSA (Methicillin Resistant Staphylococcus aureus), E-Coli (Escherichia coli), Anthrax family (Bacillus spp.), Strep (Streptococcus spp.), Pseudomonas aureuginos, Listeria monocytogenes, Candida albicans, Black Mold (Stachybotrys chartarum)

Avian Flu (H5N1)/ SARS/ CoronaVirus

- Kansas State Food Science Institute (department of Animal Sciences & industry, Kansas State University)

Hepatitis A

- Kansas State Food Science Institute (department of Animal Sciences & industry, Kansas State University)

Murine Norovirus on stainless steel , carpets and cloth

- Kansas State Food Science Institute (department of Animal Sciences & industry, Kansas State University)

Ionisation and Photocatalysis

- Center for Health – Related Aerosol Studies (department of

Environmental Health, University of Cincinnati) Dr. Sergey Grinshpun, Professor

* Reduction of airborne particles 250 times quicker than natural decay (gravity)

* Inactivation of 90% airborne micro-organisms in less than 60 minutes Anthrax family (Bacillus spp.)

Evaluation of Induct range (ex ductwork) technology in the purification of airconditioning / ventilation units

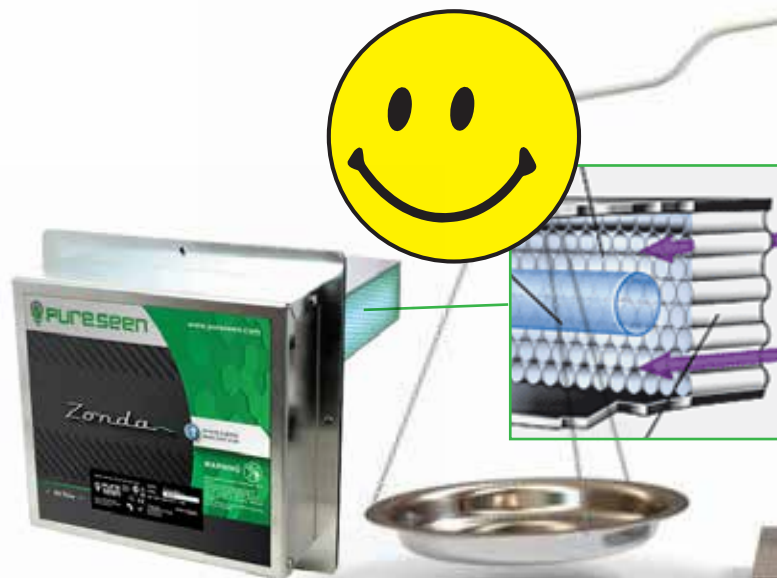
- Instituto de Pesquisas Tecnologicas (Industrial biotechnology Laboratory)

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Active Technology

PHOTOCATALYSIS - TESTS

 **Active Technology**
PureSEEN



Photocatalysis + Double Ionisation

 **Passive Technology**



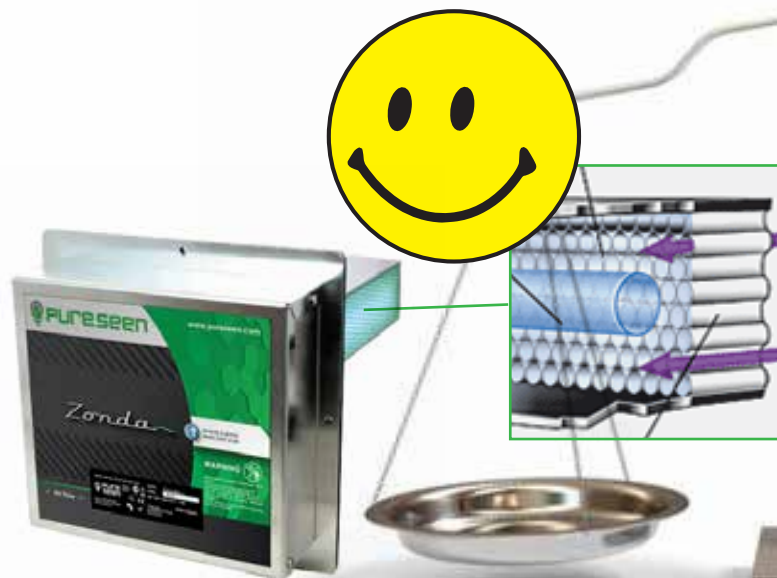
Filters – Hepa, Electronic, UV Lamps, etc...

Air & Surface Purification & Desinfection Technologies

Active Technology

PHOTOCATALYSIS - TESTS

 **Active Technology**
PureSEEN



LOW maintenance

 **Passive Technology**



HIGH maintenance

Benefits of Active purification technologies

- Reduction of Total Health Bill (THB)
 - Reduction in respiratory illnesses
 - Reduces HAI (Hospital Attained Infections)
 - Better more healthy and agreeable working environment
- The purifying agents provide health benefits:
 - Increase oxygen levels and negative ions « vitamins in the air » make breathing much easier in a stuffy environment. This also increases work productivity.
- Reduced dust levels
 - will minimise the impact (breakdowns) of your sensitive electronic machines.
- High Efficiency – Low Maintenance solutions
- Improves profitability in many market segments
- 24/24 Active protection

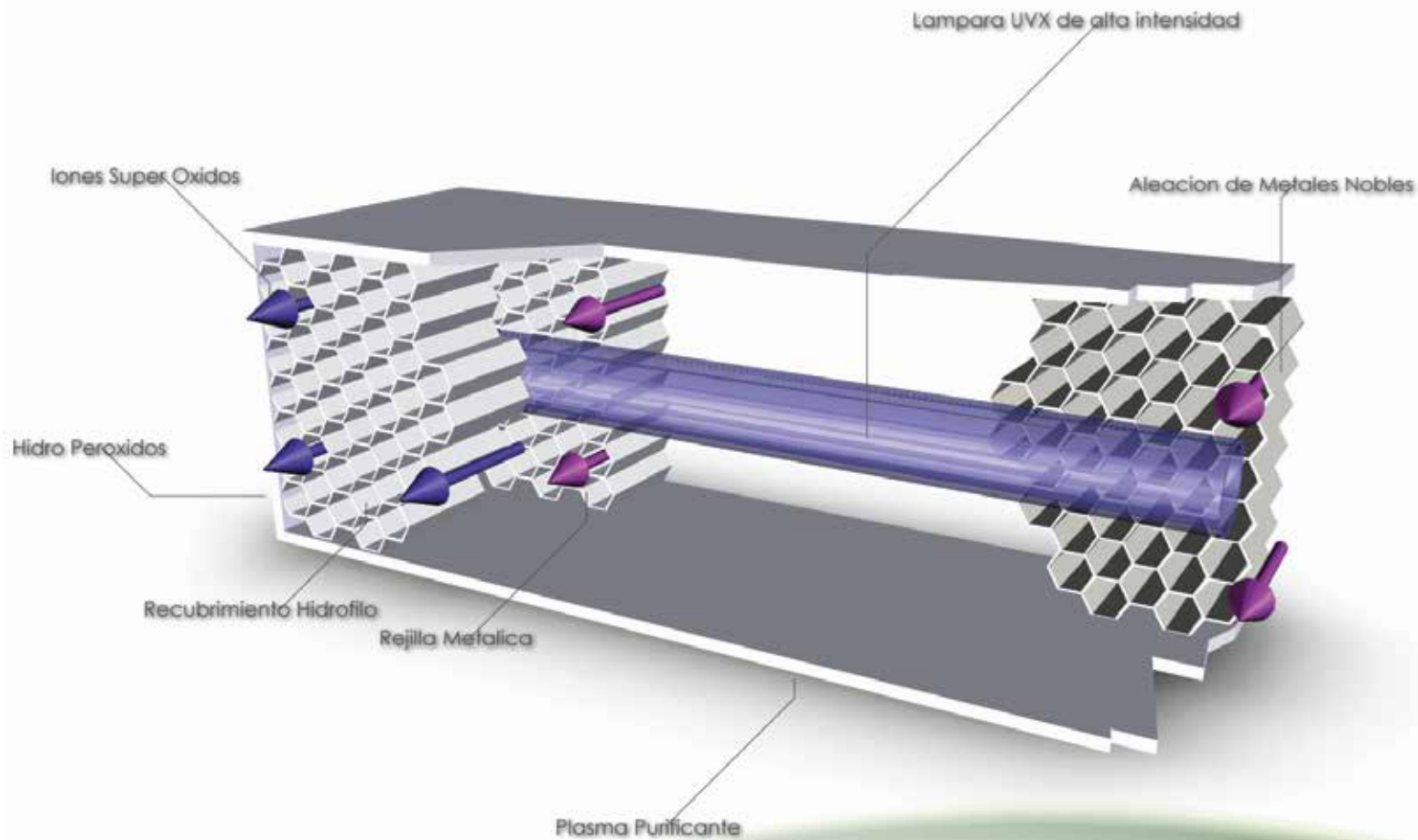
Air & Surface Purification & Desinfection Photocatalysis



Air & Surface Purification & Desinfection Photocatalysis

Active Technology

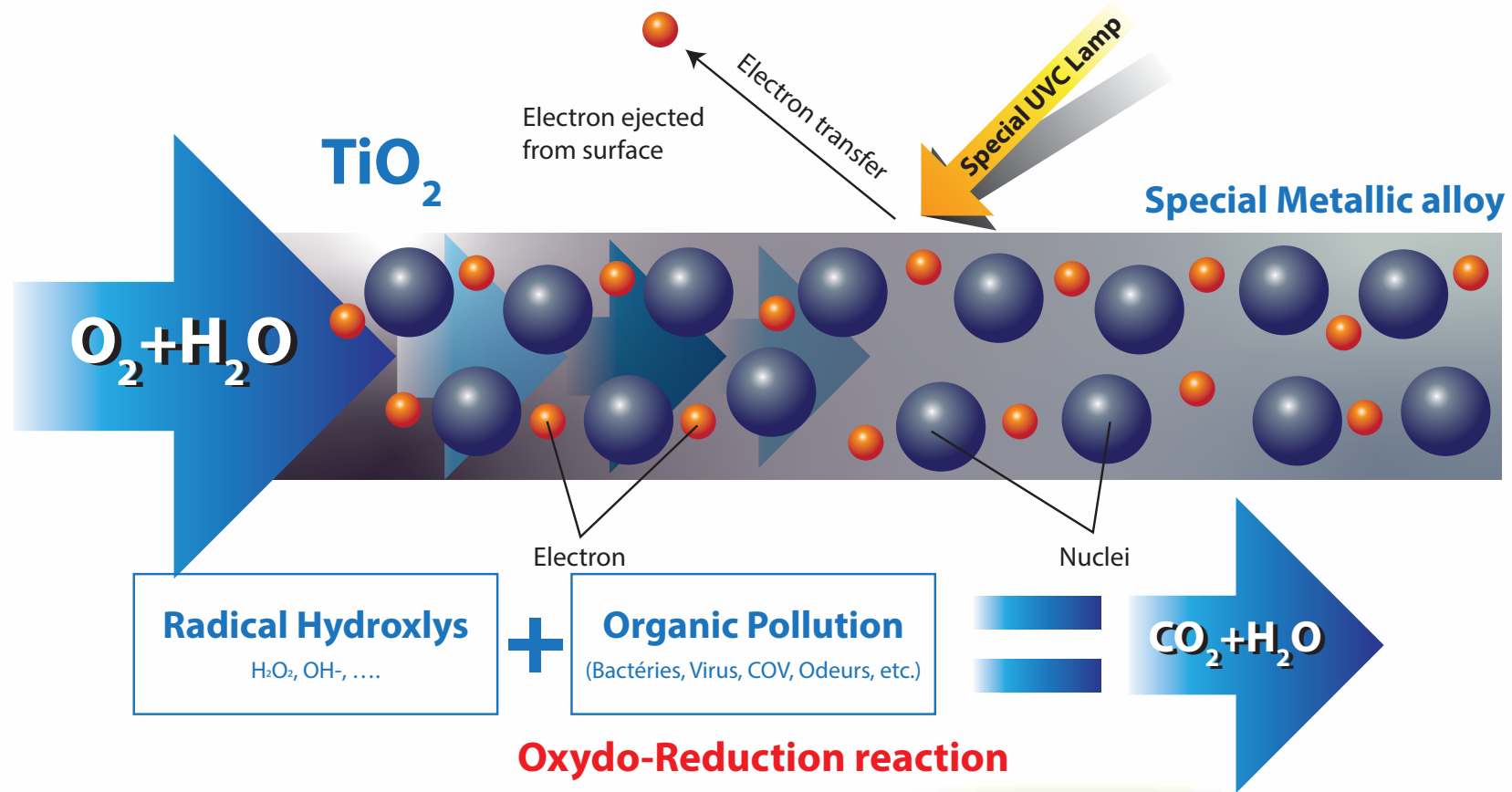
PHOTOCATALYSIS - TESTS



Air & Surface Purification & Desinfection Photocatalysis

Photocatalysis – How does it work?

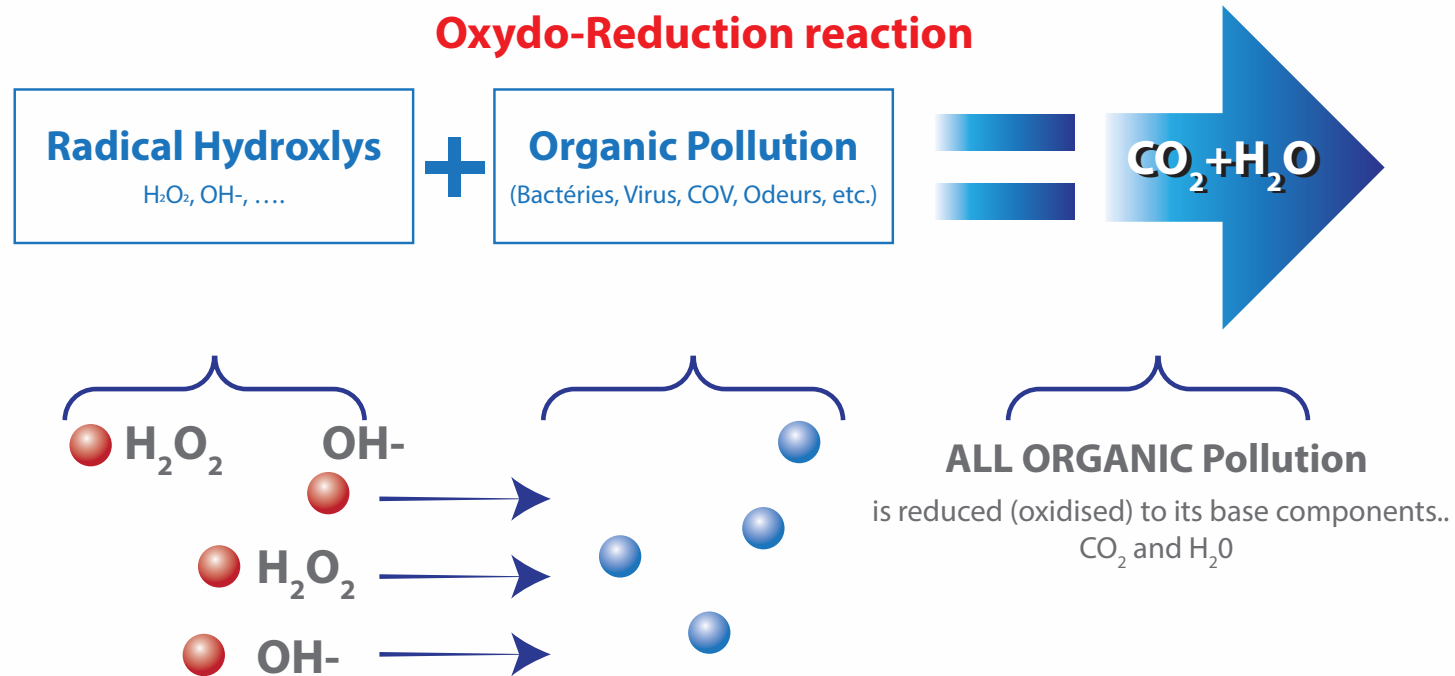
Destroys Organic Pollution



Air & Surface Purification & Desinfection Photocatalysis

Photocatalysis – How does it work?

Destroys Organic Pollution



Air & Surface Purification & Desinfection Photocatalysis

Proven Organic Pollution destruction Veterinary Sciences, Kansas University



ORGANIC Pollution
Over 99,999% destruction
In 2 Hours !

Air & Surface Purification & Desinfection Products




Air & Surface Purification & Desinfection Products

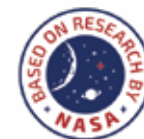
Plug & Play

Range



 Treat 0-300 m²

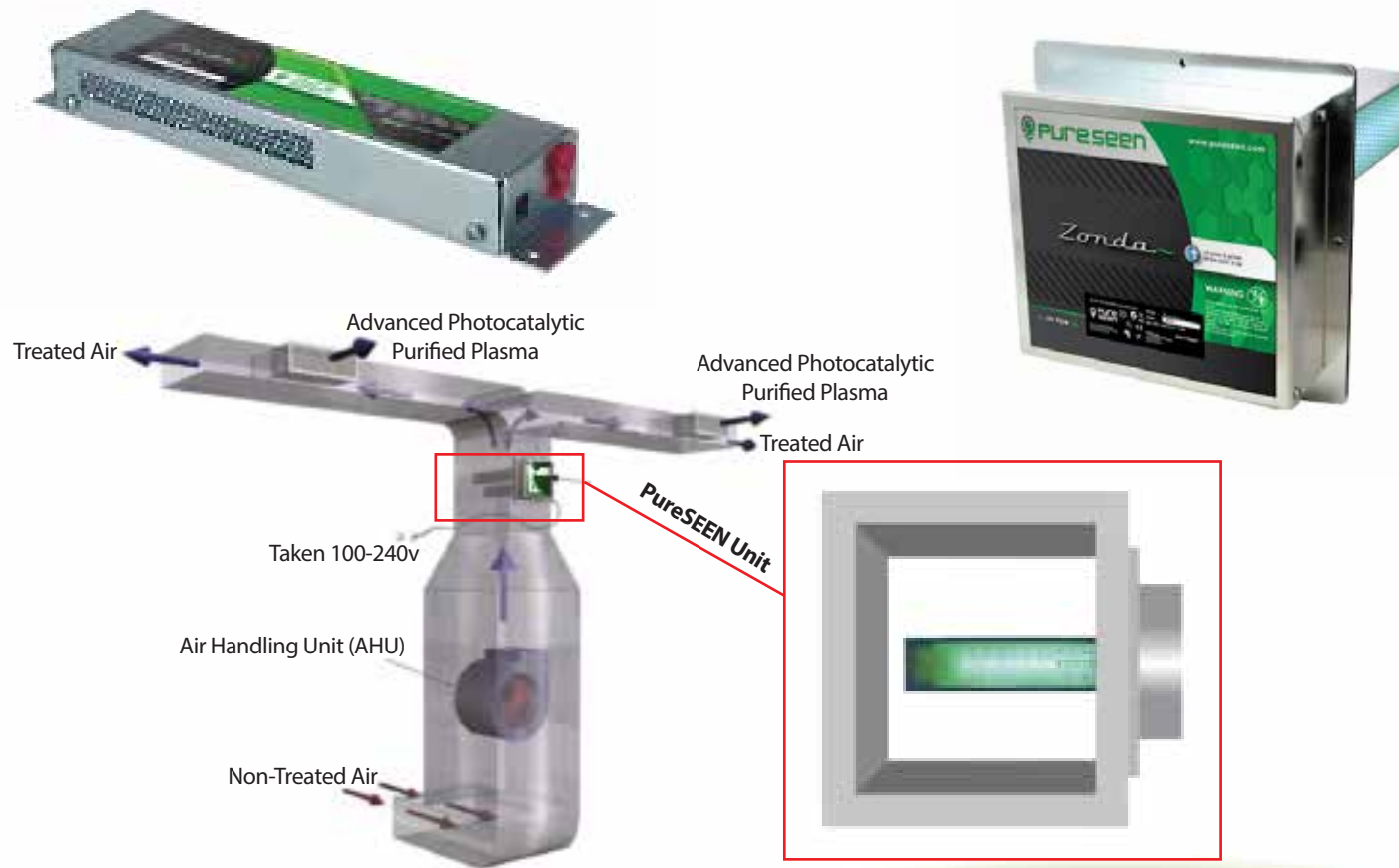
 Houses, flats, Offices, Restaurants, Waiting rooms, Bedrooms, etc...



Air & Surface Purification & Disinfection Products

HVAC

Range





Air & Surface Purification & Disinfection Products

Made to Measure

Range



-  Treat 0 – Unlimited m²
-  Fruit&Vegetable, Livestock, Poultry, Dairies, Greenhouses, etc..



SGS






Air & Surface Purification & Desinfection Markets



Air & Surface Purification & Desinfection Markets

Green Houses



-  Pest control
-  Ethylene control
-  Faster production



Air & Surface Purification & Desinfection Markets

Fruit & Vegetables




-  Double the life
 - Destruction of Ethylene
 - Destroys Bacteria



Air & Surface Purification & Desinfection Markets

Cold Storage



 Preserve fresher longer
- Fruit & vegetables
- Meats & Fish

 Destroys odors




 Higher sanitary levels



Air & Surface Purification & Desinfection Markets

Livestock






-  Stress Control
-  Infection Control
-  Higher Productivity



Air & Surface Purification & Desinfection Markets

Kinderkartens / schools/ Universities







-  Infection Control
-  Clean Air / Decontaminated surfaces
-  Lower illness rates



Air & Surface Purification & Disinfection Markets

Hospitals , Medical centers...



-  Reduce HAI
-  24/24 Air & Surface Decontamination
-  Staff and Patient protection
-  Increased Production/ Efficiency

Air & Surface Purification & Disinfection Markets

Banks, Restaurants, Cinemas, etc



 Higher Sanitary Levels

 Odor, bacteria and mold control

 Pleasant environment



Air & Surface Purification & Disinfection Markets

Airports



 Infection Control




 24/24 Sanitary Protection



Air & Surface Purification & Disinfection Markets

HVAC systems









-  Air & Surface decontamination
-  Odor & Sanitary Control
-  Energy Savings



Air & Surface Purification & Desinfection Technologies

Others ...

DECONTAMINATION
DISINFECTION
DEODORISATION
DEPOLLUTION



-  Food & Drug manufacturers
-  Transportation – Trains, Metro, etc..
-  Mosques
-  Old people homes
-  Printing industry
-  Abbatoirs



Etc...

Air & Surface Purification & Desinfection Technologies

Compatible Technologies

Compatible Technologies to provide extra **VALUE ADDED** Solutions

-  On site production of Bio Cleaners and Bio Desinfectants / Biocides
-  Advanced Dehumidification Units

-  Water based Thermal Insulation Coatings
-  Water based Waterproofing Coatings



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Thankyou

Health - Energy - Environment

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