

Ultrapure Envirocare Private Limited

About us :-

Ultrapure Envirocare Pvt Ltd is dedicated to Indoor Air Quality solutions in the air-conditioning (HVAC) system. Currently we have spread across India having offices in Delhi, Mumbai, Bengaluru, Chennai, Kolkata, Hyderabad, Gujrat, etc. Since our inception, Ultrapure have been working over various solutions as per the requirement of the customer to enhance the healthy living through our air purification technology.

The **Ultrapure PureAir & More** products endeavors to eliminate all 3 types of Indoor Air Pollutants-

- i) Particulate matter, PM (Dust, Dander & Pollen)
- ii) Microbial (Bacteria, Viruses & Molds) and
- iii) Gases (VOC's & Odors)

thereby creating a much cleaner, fresher and healthier environment to work/ live-in. With the vast experience of the air related solution, Ultrapure would like to introduce ourselves as the experts for the different technologies to take care of the different type of indoor air pollutants.

- **Indoor Air Quality**

Background

According to the WHO, Indoor air is often more seriously polluted than the outdoor air. For good health, well-being and safety reasons, humans need to be in a comfortable indoor environment with good air quality. The air must be free from dust, irritants, unpleasant smell, molds and mildew and other airborne contaminants. Indoor Air Pollution is an invisible threat to your health.

Many factors are responsible for poor indoor air quality (IAQ). Some often-unnoticed cases include:

- The level of outdoor air pollution caused due to **smog, traffic emissions** and the use of **chemical pesticides**.

- Unobserved sources of indoor pollution originated from **cleaning chemicals**, use of artificial **room fresheners, dusty carpets** and **soft/old furnishings**.
 - Improper ventilation and air distribution rate.
 - Amount of moisture present indoor leads to the growth of molds and mildew which can cause serious health issues.
 - **The primary transmission route of COVID-19 virus (SARS-CoV-2) indeed airborne.**
- Good ventilation & Air purifiers help to remove or dilute indoor airborne pollutants coming from indoor sources. This reduces the level of contaminants and improves indoor air quality (IAQ).

Technology: Advanced Oxidation plasma (AOP) air Purification system-

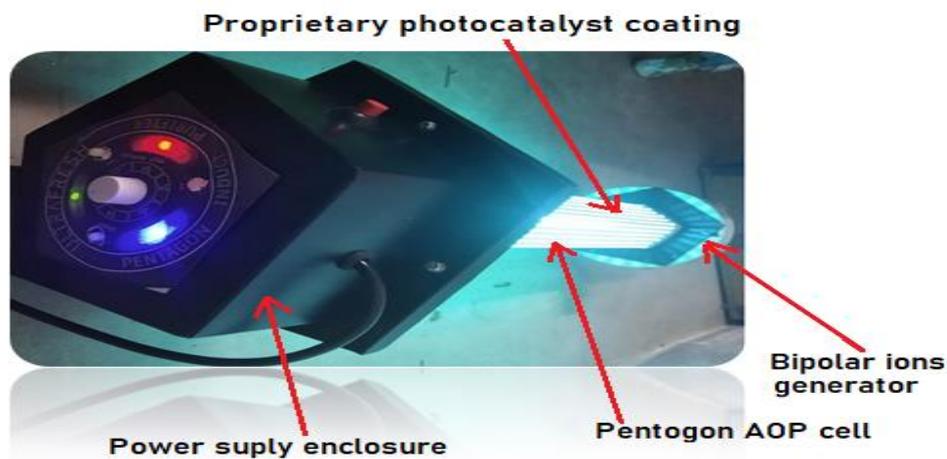


Figure1: Pentagon AOP duct air purifier

The Ultrapure AOP air purification technology is a combination of:

1. Light source UVGI/UVC

Role of Ultraviolet light:

- ✓ **UV disinfection:** UVC-254 nm also called as Ultraviolet germicidal irradiation (UVGI) because it has ability **to kill all types of microorganisms**.
- ✓ UV light also used **to initiate photocatalytic reaction**.

2. nanoX technology

- ✓ Our nanoX technology based on Photocatalytic oxidation (PCO) process.
- ✓ Basic principle of PCO is it generates friendly oxidizer (hydroxyl radicals and superoxide ion radicals) to oxidize microbes and Volatile organic compounds. In presence of light

source (UVC-254 nm or UVGI) photocatalytic material such as Titanium dioxide (TiO₂) and water present in air create friendly oxidizers, hydroxyls.

- ✓ **Novelty of our nanoX technology is the proprietary photocatalyst formulation (TiO₂ and precious metals nanoparticles) to create more hydroxyl radicals for better air purification purpose.**
- ✓ Hydroxyl's are the safest oxidizer known to human beings as they are present in abundance in the outside air whenever we have sun, oxygen and moisture present.

3. plasmOX technology

- ✓ It creates plasma of positive and negative ions.
- ✓ This bipolar ions reduce allergens and particulates from the breathing space, either by pushing them away or causing them to clump together and fall to the floor.

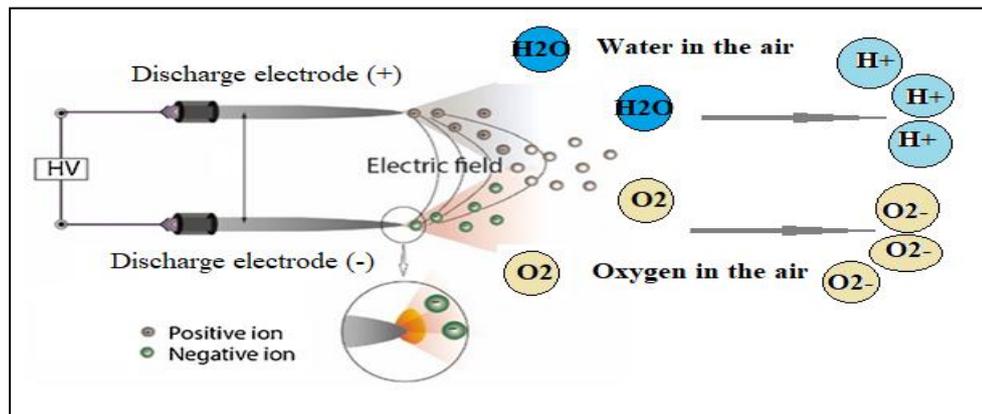
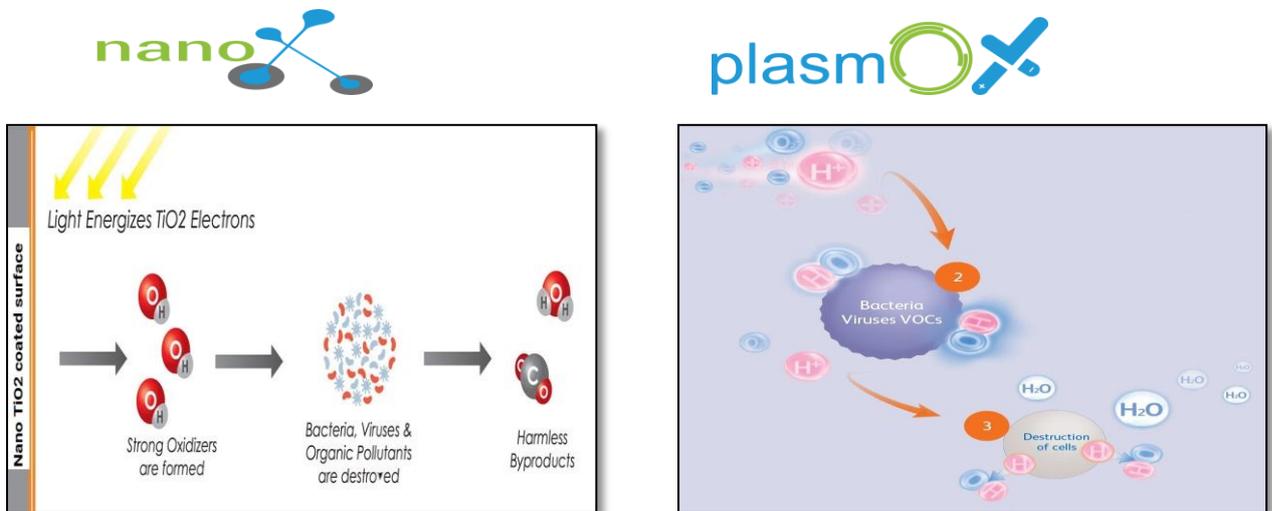


Figure 2: Bipolar ions generation by plasmOX technology

Note: The cell toxicity study conducted on Human Lungs epithelial cells (A549) confirmed that the friendly oxidizers (Hydroxyl and superoxide radicals) and bipolar ions generated by our AOP air purification system is non-toxic or safe for humans.

- How AOP technology works?



Ultrapure Advanced Oxidation Plasma (AOP) technology Vs filtration system

- AOP is a very powerful air purification technology and has the **ability to destroy particles as small as 0.001 microns** (nanometer) whereas HEPA filters can only filter particles as small as 0.3 microns.
- **AOP destroy/reduce all three types of indoor pollutants** such as microbes, volatile organic compounds (VOCs)/odors and particulate matter.
- It is **filterless complete indoor air purification** solution, **maintenance free**. Filters need cleaning and replacement regularly.
- The proactive technology **does not require the pollutant to travel across the system to get purified**, rather the AOP cell generates Hydroxyl radicals and bipolar ions which travel through the duct with the air into the conditioned space to oxidize the microbial by cell lysing and break down the molecular structure of the VOCs and Odors to make it neutral.
- Our AOP technology does **not emit harmful Ozone** during operation.

Comparison of Ultrapure AOP air purification with other technologies

	HEPA FILTER	FOAM/FIBER FILTER	CARBON MEDIA FILTER	ELECTRO STATIC PRECIPITATOR	NEGATIVE ION GENERATOR	OZONE	UV	PHI	AOP cell
SMALL PM1.0	✓	✗	✗	✓	✓	✗	✗	✗	✓
MEDIUM PM2.5	✓	✓	✓	✓	✓	✗	✗	✗	✓
LARGE PM10	✓	✓	✓	✓	✓	✗	✗	✗	✓
MICROBIAL	✓	✓	✗	✗	Partial*	✓	✓	✓	✓
FUNGI	✓	✗	✗	✗	Partial*	✓	✓	✓	✓
MOLD	✓	✗	✗	✗	Partial*	✓	✓	✓	✓
COVID-19 Virus	✗	✗	✗	✗	✓	✗	✓	✓	✓
GASES	✗	✗	✓	✗	✗	✓	✓	✓	✓
ODORS	✗	✗	✓	✗	✗	✓	✗	✓	✓
CONDITIONED SPACE	✗	✗	✗	✗	✗	✗	✗	✓	✓

*Non effective against negatively charged microorganisms

Application Field:

Healthcare

- Hospitals
- Clinics and Dispensaries
- Quarantine Centers

Education

- Schools
- Colleges / Institutes

Large Transportation Hubs

- Train stations
- Airports
- Train AC coaches
- AC dormitories

Social Infrastructure

- Restaurants / Pubs
- Hotels / Clubs
- Movie theatres
- Religious congregation places
- Salons

Government

- All government buildings incl. executive and judiciary

Retail

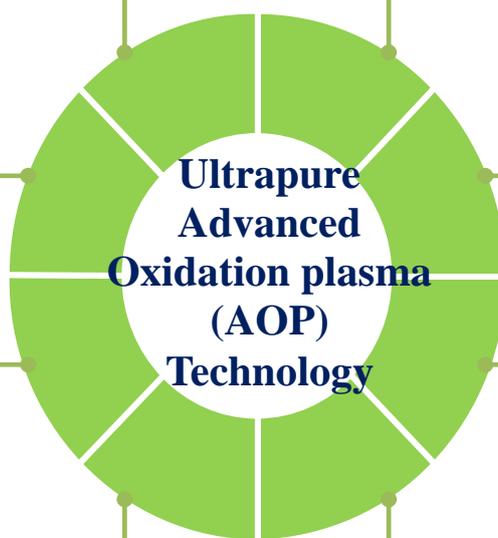
- Shops
- Malls

Households / Residential

- Critical care rooms for elderly
- Senior care
- Hostels

Industrial

- All manner and mode of worksites



- **Ultrapure air purification products based on nanoX & plasmOX technology**
(Please refer the Ultrapure product brochure)

1. Pentagon AOP duct air purifier
2. Virushield AOP Wall hung air purifier
3. Split AOP air purifier
4. Cassette AOP mini air purifier
5. UVC disinfection
6. Disinfection cabinet and many more

Ultrapure

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