



Application Brief: Aviation



Bipolar Ionization Destroys Harmful Aviation Gases, Odors and Pollutants

DEMANDS FOR AIR TRAVEL

Demand for air travel is at an all-time high and growing at an unprecedented rate. In one month airlines can carry over 73 million passengers, and that number is likely to increase. Countless passengers pass through airports, and a key component of serving them is to maintain healthy, comfortable indoor air quality. However, as the rate of air travel climbs, levels of indoor air pollution at airports increases, due to aircraft emissions, ground level emissions, cleaning products, catering and a variety of other activities.

THE NEED FOR HELIPORTS

Helicopters have proven to be an effective means of transporting injured persons from the scene of an accident to a hospital and in transferring patients in critical need of specialized services from one hospital to another hospital having that capability. A functional hospital heliport may be as simple as a cleared area on the ground, together with a windsock and a clear approach/departure path. However, elevator penthouses, cooling towers, exhaust vents, fresh air vents, and other raised features can impact heliport operations. The exhausts from helicopters has a direct impact on building air quality if the heliport is too close to fresh air vents.

AIR POLLUTANTS and CONTAMINANT SOURCES

Many of the pollutants generated at transportation facilities are particulate matter (PM) that is microscopic in size, much smaller than a strand of human hair. The particulate is either swept indoors through ventilation systems or produced within the indoor space. The small particulate can be inhaled or swallowed, and this can lead to potential health issues — since some of the pollutants are known to have a harmful effect on human beings.

The constant flow of human traffic can undoubtedly have an impact on airport and heliport pollutants. However, the primary — and most dangerous — sources of indoor air pollution and odor are from exhaust from aircraft and diesel engines, direct fuel emissions from refueling aircraft, along with larger dust particles from brakes, tires, asphalt, soil, etc. The principal pollutants can be divided into polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), inorganic gases like sulfur dioxide (SO₂) and nitrogen oxides (NO_x) and particulate matter (PM). Given the toxic cocktail that is emitted into the air in and around airports, it is clear that air purification plays a critical role in maintaining safe and clean indoor air.

CONTAMINANT	SOURCE	EFFECT
Carbon Monoxide	Jet and diesel engines	Dizziness, headache, nausea
Oxides of Nitrogen	By-product of fuel combustion - jet and diesel engines, power generators	Inflames the lining of lungs, wheezing, coughing, reduces immunity to lung infections
Oxides of Sulfur	Found in fuel, jet and diesel engines, power generators	Irritates the nose, throat, and airways to cause coughing, wheezing, shortness of breath, or a tight feeling around the chest
Hydrocarbons	By-products from burning fuels such as diesel	Respiratory issues, headache, dizziness Can be carcinogenic and mutagenic
Aldehydes	Diesel fuel	Acute irritant effects, respiratory issues

BIPOLAR IONIZATION - THE MOST EFFECTIVE WAY TO CLEAN THE AIR

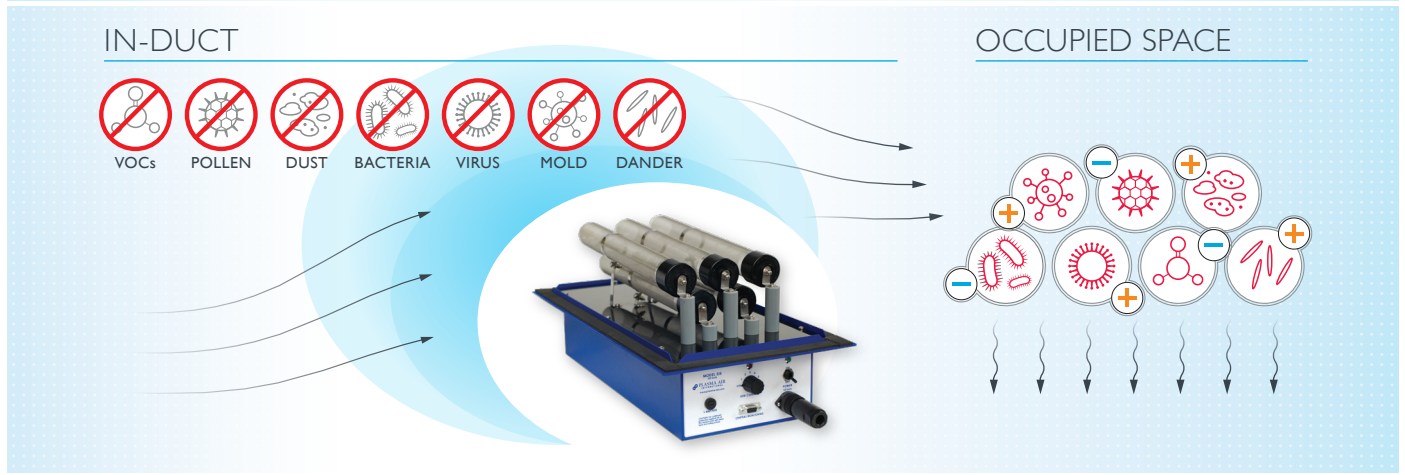
Plasma Air solutions have been successfully deployed in airports, heliports and other similar indoor environments, to improve IAQ and ensure the health, safety and positive experience of travelers, flight crew, and employees. Plasma Air's cutting-edge air purification solutions utilize bipolar ionization technology and are designed to provide significant reductions in air pollutants, odors, and hazardous volatile organic compounds (VOCs).

In independent third party testing, Plasma Air products have demonstrated dramatic reductions in indoor VOCs, virtually eliminating them entirely in a majority of cases. After a mere one-hour of running Plasma Air ionization equipment, more than 95% of all VOCs in the air were completely neutralized. A fast, simple and effective solution, Plasma Air technology is an exceptional choice for enhancing air quality in an airport environment.

HOW IT WORKS

Plasma Air ionization equipment is typically mounted in the central air conditioning system; either in the air handling unit itself or on the main supply ductwork.

How Plasma Air Ionization Works



- 1 Pollutants in the air are destroyed as they pass through the ductwork and over the plasma field.
- 2 Plasma tubes produce millions of positively and negatively charged ions. These ions travel into the occupied space, neutralizing VOCs, bacteria and viruses.
- 3 The ions also charge airborne particles, such as smoke, dust and pollen – causing them to cluster together and be filtered out of the air stream.

Plasma Air has been deployed in IAQ projects throughout the United States:

PROJECT	EQUIPMENT INSTALLED	CFM TREATED	PROBLEM SOLVED
LAX Airport TBIT Terminal	Plasma Air – 50 Series	1,180,000	IAQ improvements & jet fume exhaust odors
JFK Airport TWA Flight Center Hotel	Plasma Air – 50 Series	95,000 *in 11 AHUs	Airport Odors/Fumes *AHUs treat OA for hotel amenities, flight center and conference center areas Airport Odors/Fumes *AHUs treat OA for lobby and restaurant areas
Van Nuys Airport	Plasma Air – 50 Series	93,000	Jet fume exhaust odors from heliport
Valley 911 Call Center	Plasma Air – 50 Series	42,000	Diesel fumes
LA Fire Station	Plasma Air Mini Scrubber(s)	17,200	Jet fuel exhaust fumes
LAX Airport Fire Station	Plasma Air – 50 Series	11,000	IAQ improvements & jet fume exhaust odors