



Donaldson
FILTRATION SOLUTIONS
AEROSPACE & DEFENSE

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Air Purification System



Particulate and Chemical Filtration

Donaldson, the world leader in filtration solutions and technologies, is the exclusive source for an independently verified and endorsed technology with superior air filtration capabilities. The Donaldson Air Purification System (APS™) is ideal for a range of applications when clean air is essential for passenger, crew and worker safety and comfort.

Boeing has selected Donaldson APS™ for its new 787 Dreamliner flagship commercial jet, and the same technology may be re-packaged and installed in other aircraft, including 747s and 767s.

cleaner ca

Best filtration

Donaldson's Air Purification System (APS™) is the most effective new technology for cleansing and purifying air in commercial jetliners that operate for extended time periods with recirculating air.

APS combines both chemical and particulate filtration into one. The chemical filtration relies on a technical process called gas phase adsorption that removes bio-effluents, fuel by-products, cleaning agents, emissions from internal materials, cosmetics and other personal care products. The particulate filtration removes dust, allergens, bacteria, viruses and other irritating particles from the air passengers and crew breathe in pressurized cabins and cockpits. The Donaldson APS system is easily maintained and replaced without a need for additional service parts, required overhauls or repairs.

APS is a cost-effective and reliable filtration option that contains no moving parts and produces no unwanted byproducts.



Quality counts

Today's commercial jetliners carry more passengers and fly farther than ever before. Passengers and crews flying at high altitudes breathe recirculated, pressurized air – sometimes for many hours – that may contain irritating gaseous elements including fuel byproducts, bioeffluents, cleaning agents, odors and ozone. Airborne particulates – dust sand, aerosol lubricants and even allergens, fungi, bacteria and viruses – also affect air quality that in turn may cause poor cabin air quality and affect passenger flight experience.

The flying public is increasingly interested in air quality during commercial flights because clean air improves the passenger's in-flight experience. The news media, airlines and professional organizations such as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and the FAA's Air Cabin Environment Research Center (ACER) are actively engaged in research and other initiatives to provide the highest air quality for everyone who flies, rides or works in controlled atmospheres.

Cabin air

The APS advantage

Unlike other air filtration options, the Donaldson APS provides superior efficiency and effectiveness without generating and distributing new contaminants in the cabin.

Easily Installed and Maintained

Low Cost

Highly Effective

Reliable

No Moving Parts

No Power Requirement

Removes Dust, Particles, Bacteria and Viruses, Allergens, Odors, Cleaning Agents, Emissions from Internal Materials, Cosmetics and Other Personal Care Products

Most effective

With the introduction of recirculated air ventilation systems in commercial jetliners, more advanced filtration solutions were developed. These included High Efficiency Particulate Air (HEPA) filters that remove more than 99.97 percent of airborne particles both larger and smaller than 0.3 micron, about 1/300 the width of a single human hair! HEPA filters are widely used and capture particulate, bacteria and viruses, but they do not filter gaseous chemical compounds.

Other chemical filtration options include Ultra Violet Photocatalytic Oxidation (UVPCO) and Cold Plasma, otherwise known as Close Coupled Field (CCFT). These systems simply cannot match Donaldson APS advantages. Common drawbacks include heavy weight, limited useful life, power requirements, complicated installation, difficult maintenance, inability to fit in all structures, low efficiency, inability to handle highly concentrated or upset atmospheres and production of potentially hazardous byproducts.

Independently Evaluated and Endorsed

In 2005, the Technical University of Denmark (DTU) completed a two-year independent study sponsored by The Boeing Company that evaluated the effects of increased humidity, ventilation and air purification methods including UVPCO and Donaldson APS technology on aircraft cabin air quality. DTU concluded that gas phase adsorption, the Donaldson APS approach, is the preferred filtration method because it creates better air quality and passenger comfort than increased humidity alone, without generating unwanted byproducts, such as ozone. DTU wrote that APS technology "gave the best overall performance and avoided the major problems that were identified in connection with the UVPCO units."

In addition, the study concluded that "photocatalytic air purifiers were found to oxidize ethanol... to produce unacceptably high and potentially harmful levels of acetaldehyde and formaldehyde...the production of unwanted byproducts should be eliminated..."

The study supported Boeing's decision to select Donaldson APS for the new 787 Dreamliner, citing its "tremendous benefit" for aircraft air quality.



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