

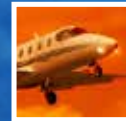


**Donaldson**  
FILTRATION SOLUTIONS  
AEROSPACE & DEFENSE

AEROSPACE & DEFENSE

# Leading the Way in Military and Commercial Fixed Wing Aircraft

# Ready for Takeoff.



Airplanes take to the skies nearly 80 million times each year, carrying five billion passengers and 90 million metric tons of cargo.

Donaldson Aerospace & Defense is proud to provide advanced filtration solutions in support of fixed-wing operations worldwide.

# Complete

## Passenger or Crew, Just for You

On military and commercial aircraft, crews must monitor a complex array of instruments to ensure a safe and smooth flight. Many of their aircraft systems handle vital functions - such as fuel distribution, hydraulic actuation, environmental control, avionics and electronics - that depend on effective filtration to operate reliably.



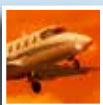
*Donaldson offers a comprehensive selection of filtration solutions for aircraft operators.*

Donaldson's problem-solving heritage spans nearly a century. The company traces its start to the dawn of the aviation age, and it produced its first military products during World War I. A team of talented, dedicated employees back up these products with exceptional customer service, and Donaldson's international network of production and distribution partners covers the world for immediate response when needed.

Donaldson's complete commitment to you:

- A strong partnership to ensure that we develop solutions that meet your requirements
- The industry's best and most comprehensive research and development
- Rigorous designs that exceed operational standards
- Product and systems that meet or exceed ISO9001/AS9100 quality requirements
- FAA/EASA licensed facilities and ability to meet strict industry specifications
- Years of validation in the field
- Unmatched technological capabilities and product expertise
- Far-reaching global distribution and customer support

Detailed information is available online at [www.DonaldsonAerospace-Defense.com](http://www.DonaldsonAerospace-Defense.com)



# Solutions



## Donaldson Delivers

Military and commercial airplanes face many operational challenges based on unique mission profiles. Donaldson technology leadership enables aviation operators to meet or exceed their operational objectives.

**PROBLEM:** The Lockheed Martin F-16 Fighting Falcon is one of the world's most capable fighter aircraft. F-16s use accurate, responsive radar for navigation and target acquisition. Radars generate heat that can cause malfunctions that shut systems down.

**SOLUTION:** Donaldson filtration systems keep the Falcon's radar cool by catching dirt or other particulates in the coolant that may corrode or damage cooling system components. A fully functional radar enables the F-16 to prevail during critical missions.

**PROBLEM:** The G650 is Gulfstream's largest and fastest business aircraft. At a speed of Mach 0.925, the G650 will cover long distances over shorter time. The aircraft incorporates some of the industry's most advanced technology that requires consistently clean environments to function effectively throughout every flight.

**SOLUTION:** In order to keep the hydraulic system debris-free, Donaldson designed and manufactured three hydraulic manifolds for the Gulfstream G650. The complexity of this program required advanced engineering capabilities to deliver high-performing filtration systems that consolidated functionality while meeting performance, cost and weight requirements.

**PROBLEM:** The new Boeing 787 Dreamliner required substantial improvements in cabin air quality to increase passenger comfort.

**SOLUTION:** Donaldson's new Air Purification System (APS™) removes both chemical and particulate contaminant from the aircraft cabin. The 787 will be the first aircraft to use this innovative technology, removing chemical irritants, allergens, bacteria, viruses and odors from the cabin for unprecedented passenger comfort.

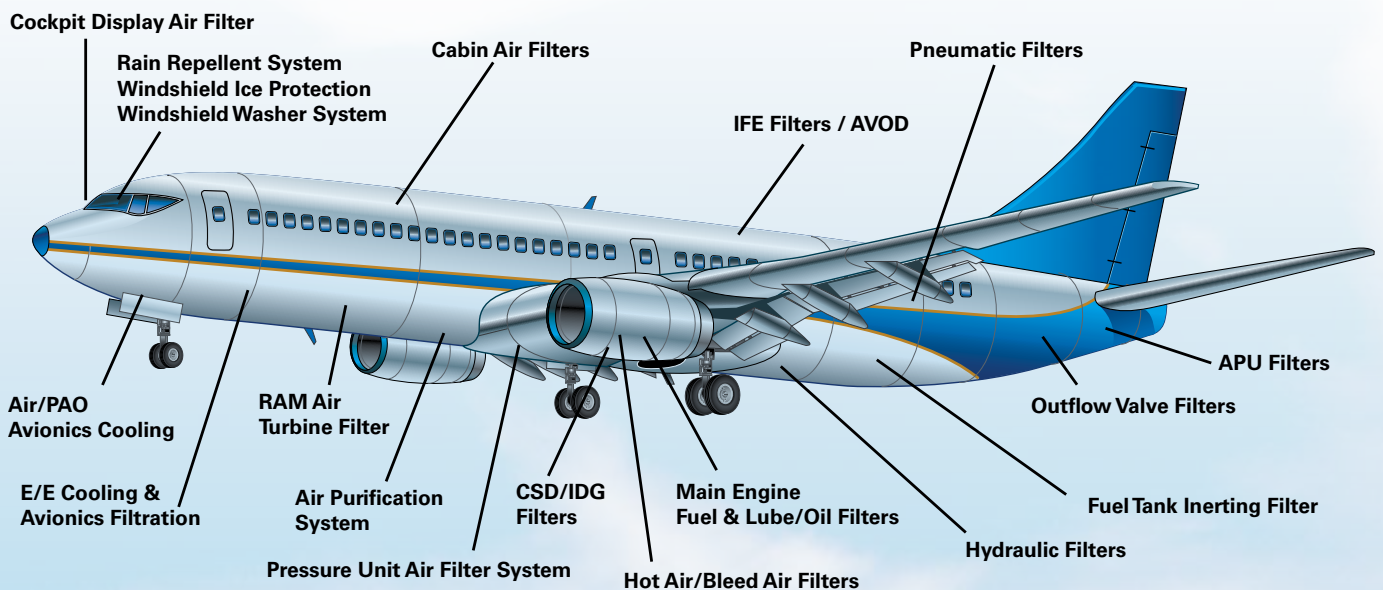
# Field Pro

## Total Filtration System & Solutions

Donaldson offers hundreds of filtration medias and has over 1,500 active patents. Donaldson leverages this extensive technology library to design filtration solutions for military and commercial aircraft engines, aircraft cabin environments, fuel, oil, hydraulic, pneumatic systems and electronics. Donaldson also designs windshield visibility systems that improve the aircraft safety by enhancing pilot visibility.

Donaldson is the preferred filter supplier for hundreds of military and commercial OEMs and operators, including the biggest names in aerospace and defense - Airbus, Alenia, BAE Systems, Boeing, Bombardier, Cessna, Dassault, Eaton, Embraer, GE, Gulfstream, Hamilton Sundstrand, Honeywell, Liebherr, Parker Hannifin, Rolls Royce, Snecma, Sukhoi and Thales. No one else in the filtration industry can match Donaldson's capabilities or proven track record.

### FIXED WING SYSTEMS



# Over

## Partner in Design

Donaldson works closely with customers, helping their engineering teams adopt and integrate filtration innovations. Cooperative customer relationships have enabled Donaldson to develop air and liquid filtration solutions that meet or exceed our customers' technical requirements.

Donaldson manages its advanced design process with Accelerated Product Development (APD), a stage-gate process consistent with our customer's design, development and production controls. APD involves seven phases – project screening, project initiation, concept definition, design validation, pilot run, product launch and post-production audit – that involve multi-functional teams including engineering, sales, manufacturing, supplier management and logistics to ensure Donaldson products meet or exceed customer requirements and expectations.

Donaldson has developed many innovative products. Many have earned Type Certificates or Supplemental Type Certificates from FAA, EASA and other national airworthiness authorities. Donaldson filtration systems improve performance and lengthen operational life for engines and auxiliary power units, avionics and other aircraft operating systems.



*Cabin recirculation air filters are a great example of developing products in conjunction with aircraft manufacturers.*



*Pressurized air filtration systems are one of many innovative products developed by Donaldson.*



# Advanced

## Filtration Media Options

### Media Design and Development

Donaldson has the ability to design and develop liquid and air filtration media for specific applications. Unique to the industry, Donaldson's prototype filter media manufacturing facility encompasses development and testing of numerous media formulations. This exclusive capability gives Donaldson the opportunity to develop proprietary media grades for advanced applications.

### HEPA Filtration Media

- High Efficiency Particle Air (HEPA) filter
- Greater than or equal to 99.97% efficient on 0.3 $\mu$  particles
- Media is used within commercial aircraft cabin recirculation systems and other compressed air systems

### Ultra-Web® Nanofiber Technology

- Increases filter life span with the ability to hold up to five times more contaminants than standard cellulose media filters

### Strata® Tubes

Donaldson Inertial Particle Separator systems

- Protect diesel, gas turbine engines and environmental systems
- Use inertial force to spin contaminants out of incoming air
- Remove up to 99% of particulates from air flows
- No maintenance required

### Synteq XP™

- Patented media enhances system performance by increasing the filter's efficiency, reducing operating pressure drop and extending the filter life up to three times that of a traditional cellulose filter

### Chemical Filtration Media

- Removes chemical contaminants - such as molecular compounds and odors - from an air stream without generating unwanted byproducts



*Strata® Tubes are proven performers that require little maintenance.*

Donaldson's custom filtration solutions - based on actual experience in the field - ensure that equipment performs when and where it is needed.

### Flexibility in Filter Configuration

Donaldson filters can be designed in a variety of sizes and filter media choices to meet your system specifications.

- Panel
- Cylindrical
- Half-moon
- Custom packaging to meet unique customer requirements



*Avionics filtration solutions are designed for advanced applications.*

# Technology

## System Overview

### Particulate Air Filters

- Can be designed to meet challenging performance and weight requirements
- Various options that include primary, secondary and pre-cleaner media
- Easily customizable designs that may include unique mounting brackets or filter housings



*Donaldson APS is the most effective new technology for cleaner cabin air.*

### Chemical Air Filter - Air Purification System (APS™)

- Advanced filtration technology that removes particulates, chemical and biological contaminant
- Highly efficient systems that clean cabin air without creating unwanted byproducts
- Simple operation. No power required and easy to maintain

### Hydraulic Manifolds

- Minimizing the space required for your hydraulic system
- Complex or t-type manifolds consolidate functions such as indicators, check valves and sampling ports, along with return, case drain and high pressure lines into one system
- Robust designs that optimize performance yet minimize system weight and space
- Intelligent Filter Indicator which allows the operator to monitor the time remaining before filter element replacement



*Particulate air filters are easily customized to fit unique requirements.*

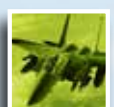
### Fuel, Lube Oil, Transmission & Coolant Filtration

- Highly efficient and effective systems that clean coolant, fuel, lube oil and transmission fluid
- Extensive design and manufacturing capabilities
- T-type filters and manifolds can include differential pressure indicators, check and bypass valves and sampling ports



*Highly efficient liquid manifolds protect critical aircraft components.*

Donaldson's worldwide network also delivers parts and service immediately whenever and wherever they are needed. More information about Donaldson products can be found at [www.DonaldsonAerospace-Defense.com](http://www.DonaldsonAerospace-Defense.com)





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**Donaldson Company, Inc.**  
**Aerospace & Defense Group**

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