Aerospace and Defence
Hydraulic, Fuel, Lubrication and Air Systems
Porvair Filtration Group is an international leader in the development and supply of materials and products for applications in filtration and separation.

Porvair manufactures in the UK, USA and China and has an extensive network of sales offices and distribution channels throughout the world. Our expertise is wide and varied, with products used in markets such as:

- Aerospace and Defence
- Food and Beverage
- Gasification
- Microelectronics
- Nuclear
- Pharmaceutical
- Porous Media and OEM Materials
- Printing
- Process
- Transportation
- Water

Our ongoing success is based on a dedication to technical excellence and superior customer service. Our future will continue to be built on our investment in research and development to provide innovative new products that exceed the expectations of our customers in solving the challenges they face.
Porvair designs and manufactures specialist filtration components and assemblies to meet demands of the aerospace and defence industry for contamination control in hydraulic, fuel, lubrication and air systems. Our filters protect vital sub-systems such as flight controls, fuel management and fuel inerting systems, thrust reversers, braking and steering, power generation and air intakes in aircraft, helicopters, military vehicles, missiles and spacecraft.

Porvair is a purpose built design, manufacturing and test facility based in Fareham, Hampshire, for its aerospace products.

Our cellular production layout covers key operations in the manufacture of our products, including:
- assembly and test
- filter cartridge assembly
- machining
- welding
- chemical processing.

We provide a service for manufacture to customers’ designs and specifications. Our key areas of expertise include:
- supply chain management of parts
- assembly of hydraulic, fuel and air components
- testing to customer specifications
- products include filter assemblies, non-return and pressure relief valves and special strainers.
Filter Manifolds

Designed to integrate a variety of filtration components within a single manifold, including:

- filter elements
- impending and actual blockage indicators
- anti-drain valves
- by-pass, check and pressure relief valves
- pressure transducers
- temperature sensors
- water separators (air systems)
- inlet strainers.

Filter Assemblies

Porvair manufactures filter assemblies for hydraulic, fuel, lubrication and air systems. Applications include:

- hydraulic pressure, return and case drain
- thrust reverser actuation systems
- fuel supply for both main engine and APUs
- fuel inerting systems
- gearbox lubrication.

Air Filtration

We supply a range of equipment to condition air for systems, including engine air intake, crew comfort and protection of sensitive electronic equipment.

- Air Particle Separators provide high efficiency air/particle separation in highly contaminated environments.
- Air conditioning panels are designed to remove moisture, odour and particulate contamination from air flows.

Fuel Inerting Filters

The elimination of flammable fuel vapours in commercial aircraft fuel tanks is a top airworthiness priority. Lightweight onboard aircraft fuel tank inerting systems address this issue and can easily be fitted within existing aircraft designs. The systems reduce oxygen from its source of engine bleed air, delivering nitrogen-enriched air into the aircraft fuel tanks reducing the risk of fuel tank flammability. Our filtration system ensures that the source of engine bleed air delivered to the sensitive air separation modules in the inerting system is free from both liquid and particulate contamination.
Differential Pressure Indicators and Filtration Accessories

**Differential Pressure Indicators (DPI’s)**

‘On condition’ maintenance is a feature of modern fluid power technology. Our DPI’s provide a signal to show the extent of filter blockage, thus reducing maintenance time and costs by eliminating unnecessary filter element change.

We can provide DPIs with many special features, including:

- Visual and/or electrical indication
- Thermal lock
- Flow surge suppression
- Non-reset function.

**Filtration Accessories**

- **Anti-drain valves** prevent loss of system fluid or ingress of air during element change. A special feature can also prevent fluid flow should the element not be fitted.
- **By-pass and by-pass indicating valves** allow fluid flow should the element block during service.
- **Pressure relief valves** protect sensitive equipment by relieving over-pressure conditions.
- **Differential pressure switches** provide an indication of low pressure or flow.
- **Water drain valves** for use on fuel system filters.
- **Water separators** to extract free water from system air supply.
- **Check valves**.
- **Self-seal coupling** for rapid connection to service equipment.

**Filter Kits**

For customers wishing to integrate filtration accessories into their valve body or manifold, we supply kits of parts, which can include:

- filter elements and bowls
- element condition indicators
- valves (anti-drain, by-pass, etc).
Filter Elements and Last Chance Filters

Filter Elements

The filter media for disposable pleated elements can be polymeric, glass fibre or sintered metal fibre used in combination with a variety of support and drain meshes to optimise cost and performance. Typical absolute filtration ratings are 5, 10, 15 and 25 micron with a Beta ratio greater than 200.

Polymeric or resin-impregnated cellulose
Moderate dirt-holding capacity and light-weight. Offer a cost-effective solution for low pressure and temperature fuel filtration.

Glass fibre
Reduced pressure drop, increased dirt-holding capacity and can withstand greater pressures and temperatures than cellulose filters.

Sintered metal fibre
Unparalleled performance and can withstand extremes of temperature and pressure. Studies indicate a superior resistance to ‘dumping’ of downstream contamination and maintaining integrity during dynamic flow conditions.

Last Chance Filters and Screens

These filters and screens can be built into a variety of aerospace fittings and valves, designed for flow-wash conditions or any other specific application where absolute filtration is critical.

Materials of construction
- Sintered woven wire
- Sintered metal powder
- Sintered metal fibre
- Stainless steel or nickel-based alloys

Methods of construction
- Resistance welding
- Fusion welding
- Electron beam/laser welding lab
- Vacuum brazing
Quality

Porvair is qualified to the following aerospace standards:

- ISO9001
- AS9100
- EASA Part 21 Subpart G Enabling Issue of EASA Form 1.

Testing

Porvair has a fully equipped test house and laboratory, with dedicated engineers working to develop the best filtration solution. Test equipment and facilities include:

- multi-pass test rig - efficiency and filtration rating of filter elements
- high pressure flow rig - element life, differential collapse, flow/ΔP
- flow fatigue rig - high temperature/ΔP flow cycle testing of elements
- Cold start rig - simulated cold start at –54°C and 20.7MPa
- Fuel test rig - element life testing
- Impulse fatigue rig
- Environmental temperature chamber.