



Pall Corporation



Filtration Technology for Original Equipment Manufacturers Protection

Filtration. Separation. Solution.SM

Problem Solvers for Original Equipment Manufacturers

“One Day, all fluids will pass through a Pall filter”

- Operations in 30 countries employing 10,000 people
- Annual sales exceeding \$2.3 billion
- \$72 million investment in R&D
- Operating in two broad markets - 'Industrial' and 'Life Sciences'
- Dedicated to the advancement of filtration and separation technology and development of fluid clarification systems

Developing and validating filtration solutions enable leading edge technologies to be employed with confidence in demanding applications in optimized product configurations.

The Transportation group is able to adopt technologies from both the Industrial (typically particulate and separation capability) and Life Sciences (microbial and bacterial removal capability) segments of Pall, employing our broad portfolio of proprietary materials to meet the most complex of challenges from OEM's.

Pall AeroPower, Transportation Group is part of the Pall Industrial business of Pall Corporation.

The Transportation group has a global reputation for technical leadership in its products and extensive development experience with the market leaders in Aerospace, Powertrain, Construction, Agricultural and Mining industries.

Fuels, Lubrication and Hydraulic fluids, Air and exhaust gases are typical of the fluids the Transportation group clean and/or separate for sustainable reliability and performance, improved environment and reduced cost of ownership for equipment users.

Introduction to Pall Corporation

Pall supports OEM customers with a commitment to early design feasibility, prototyping, performance evaluation in the laboratory and the field, and continuous improvement cost reduction programmes. Pall operates to TS16949 for its Powertrain products and adopts compliant practices for mobile equipment solutions.

Pall Proprietary Media Technology

Pall has many proprietary membrane technologies covering metal, ceramic, organic and inorganic materials.

Pall manufactures these material configurations for filters and filter membranes.

All have been developed to meet specific needs and with the associated Pall fibre and surface treatment core expertise, can be adopted for many challenging applications.

- Depth media typically have a graded pore structure of meltblown fibres, manufactured using a computer controlled process
- Wetlaid processes for thin inorganic fibre media with uniform, graded pore structures
- Sintered metal and ceramic media providing consistent pore structures and the benefits associated with Pall's high void volume capability.

Cleanliness for fluid and system performance - delivering 'reduced cost of ownership'



Transportation Group

“taking out what the eye can't see”



Hydraulics and Lubrication



Pall has a deserved reputation for pioneering new scientific frontiers. The proprietary Pall Ultipor® media technology has evolved to meet the development in hydraulic and lubrication fluids and the high reliability demands for systems components, including bearings and controls. Ultipor filter media has been developed into a continuously graded pore structure for greatly enhanced voidage with smaller pore structures, enhanced fatigue life (SRT - stress resistant media configurations), increased dirt capacity and filter service life.

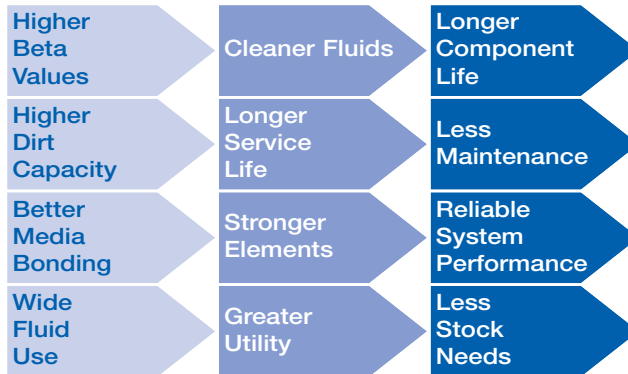


OEM Benefits

Cost savings

- Less warranty costs
- Less field service demands
- Virtual elimination of catastrophic failure on start-up
- Less inventory
- Filter elements available worldwide
- Worldwide technical field support
- Enhanced equipment reliability and reputation

Supported by a scientific and technical service second to none.



Fuel Filtration

Pall introduced a new depth filter medium into diesel and gasoline fuel filtration to improve particulate control for sustained longer filter service intervals.

To that end, Pall has evolved its proprietary melt blown technologies to provide consistent levels of cleanliness in operation to meet the ISO 12/9/6 fluid cleanliness required for the latest HPCR (High Pressure Common Rail) performance standards for injector protection.

The efficacy of this filtration media is validated to specific engine platforms, in terms of challenges to the filter's integrity in operational conditions including real duty cycles, vibration and temperature variation.

Unique Construction

The new generation of Pall fuel filters provide lower clean pressure drops, and a greater void volume for extremely high dirt holding capacity, ensuring increased filter service life for reduced operating cost. 'Clean' and 'green' handling concepts have been developed for the OEM's.



Transmissions



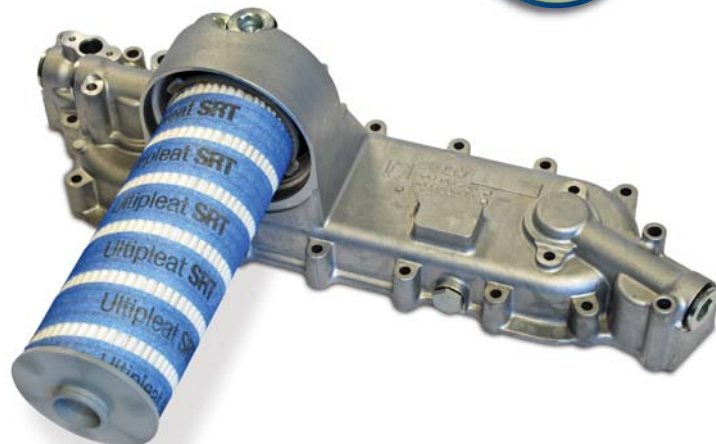
Pall has an extensive position in applying its technology to the latest automatic, CVT, IVT and Double Clutch Transmission applications including specialized Sports versions. The arduous and demanding performance requires special care in filter selection, for long term filter reliability.

Developing specific needs for particular integrated transmission configurations has been an expertise that Pall has developed over many years of experience utilizing the Ultipor® filtration media platform.

Pall filter elements meet the fluid compatibility, thermal cycling and required service life expectations.



Engine Oil Filters



Ensuring the engine oil is clean for performance and emission related conditions is a vital part of the OEM's package. Adopting new filter structures and materials to enhance installation flexibility and ensure filter efficacy for specific duty cycles is all part of the Pall total solution package.

Air Filters



Gas Blow by Filters

To prevent oil droplets present in crank-case gases from fouling turbocharger and after-cooler surfaces, Pall's proprietary filter media has an open drainage structure that allows collected oil to be drained back to sump.

- Unique patented configurations for engine intergration provide 'fit for life' opportunities.



Cabin Air and Air Control Filters

Filters for the removal of harmful particulate contaminants, liquid (aerosol) contaminants and other VOC's are provided by Pall.

These solutions feature combination particulate barriers and absorption technologies (disposable and regenerative) and also integrated sensor and diagnostic devices.

Pall filters feature low initial pressure drops and maintain a low pressure drop in service, while resisting fouling in harsh environments. Efficient filtration ensures a safe and comfortable environment for vehicle occupants.

Design and Consultancy

Pall Transportation has broad technical capability focused through its advanced engineering teams combining the expertise of design, process, and testing personnel. Dedicated to hydraulic and lubrication fluids, fuels, water, process fluids and cabin air to name but a few, these specialist personnel provide unrivalled experience in this market. Design support for OEM engineers responsible for lube, fuel, and CCV systems, coupled with modelling and rapid prototyping, provides OEM's with a partner for sustaining optimized solutions.

With a global reach and all the necessary tools for effective and efficient transfer of design models and data communication, we offer a comprehensive service to reduce

design times and provide equally well designed test and validation protocols.

Pall guarantees to support core development teams by participation anywhere in the world commensurate with the requirements of an OEM's development programme. With some 29 Pall Industrial - Scientific and Laboratory Services (SLS) centers in the world and offices in 30 countries, Pall can respond positively to assist field development programmes and regional development requirements. Participation at the early concept and design stage can provide significant savings and assist faster programme introductions.



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Pall Corporation has offices and plants throughout the world. For Pall representatives in your area, please go to www.pall.com/contact

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