



Pall Corporation



For Total Fluid Management



*Filtration. Separation. Solution.<sup>SM</sup>*



# Global Expertise

*Pall Corporation, with annual sales of more than US\$ 1.4 billion dollars, is the most widely qualified supplier of filtration, separation and purification solutions.*

Pall Corporation's diverse technologies are employed in many areas including Biotechnology, Biomedical, Food and Beverage, Microelectronics, Industrial Machinery and Equipment, Aerospace, Power Generation, Water Processing, and Chemical and Petrochemical fields.

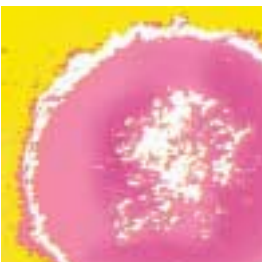
Pall Corporation's offices can be found in 70 countries around the world. Our manufacturing facilities are located in the United States, the United Kingdom, Ireland, Puerto Rico, Germany, Italy, China and Japan.

With industries continually under pressure to improve their processes and reduce costs, well-designed, validated and efficient processes are essential to success.

Leading companies are using outside services to leverage their capabilities and allow themselves to strategically engage their own resources and talents in core competencies.

As a world leader in separation and purification technology, Pall has long been in a unique position to provide technical services in support of its products and customers. The experience and specialized skills that we have developed have helped many companies to achieve their objectives and attain total fluid management.

In this publication and associated Pall Technology Services documents, we explain our complete service offerings and how Pall can help you.



# Services

*Pall Technology Services can provide you with consultation on total fluid management - an integrated solution to filtration and process requirements to achieve improved process efficiency and cost savings, and fluid cleanliness management - control of contaminants by fluid clarification and analysis.*

*Our commitment is to extend our range of professional services in a number of key areas, which complement our products and can be vital to your competitive advantage.*

## Troubleshooting and Consultancy Services

Even the best filtration, separation and purification system may be affected by unpredictable events such as variations in process fluid quality or environmental factors - and often at the most critical time. Such events can result in costly down time or even loss of a product batch.

Continuous improvement is a necessary endeavor today with increasing pressure on process efficiency and costs.

Pall offers troubleshooting and consultancy services to ensure that your processes run smoothly and that potential process improvements are introduced in a controlled manner to result in significant benefits and cost savings. The end result is a completely integrated filtration solution.

## Contamination Analysis

The presence of unexpected particulate or microbial contaminants in process fluids can lead to system failure, batch reprocessing or even batch rejection. It is critical that these contaminants are quickly isolated and identified so that possible sources can be traced and corrective actions applied to the process.

Pall has over fifty years experience in contamination analysis and control and offers a complete service for analysis of particulate and microbial contaminants.

Our goal is to ensure your product purity. Investigations are fully documented and a technical report is issued to you at the end of the study.



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### Process Development

Pall has the capability to support all aspects of the development of separation and purification systems. Whether driving to bring new products to market or streamlining existing processes, Pall Technology Services provide fast and flexible solutions and high quality documentation to back it up. Pall specialists operating in the field can quickly access dedicated Pall technologists, equipment and laboratories for services ranging from simple advice to pilot investigations or fully detailed research proposals.

Pall is the largest provider of separation and purification media, laboratory, pilot and production hardware and both automated and disposable filtration systems. We are uniquely positioned to quickly recommend solutions that optimize process efficiency for each customer.

### Training Resources

Effective training of personnel at all levels is important for maintaining a profitable operation and meeting the needs of regulatory authorities. Insufficient training can result in a manufacturer failing to comply with industry or government regulations. Personnel should receive training appropriate to the duties assigned to them and continuing training should be given.

Pall is able to provide a range of training courses to ensure operators and managers attain the optimum level of competence in all filtration and separation disciplines.

### Water Appraisal

Pall Technology Services can assess all water uses at a facility, including the quality and quantity of all wastewater discharges and their compliance with regulations. Our water system audit and engineering includes recommendations for alternatives to save money and improve regulatory compliance.

### Filtration Media Development

Selection of the optimum filtration media for a given process requires significant filtration expertise. Pall's Technology Services group will recommend and provide the optimum separation and purification media for each customer's process. Whether bringing new products to market or streamlining existing processes, Pall's services range from simple advice to fully detailed research.

### Co-Development agreement

Through a co-development agreement with Pall, customers provide joint funding for the development of media, materials or processes that are required for their filtration and purification processes.

### Pre-inspection Reviews

Filtration is often a critical step in a manufacturing process. Regulatory authorities often review the documentation and procedures associated with users' filtration processes.

Pall Technology Services can assist you in being fully prepared for inspections by either internal or external auditors by offering pre-inspection reviews. This service includes a review of procedures, review of documentation and, in some cases, recommendations for additional action required to meet stringent regulations.

### Qualification of Integrity Test Equipment

Filter integrity testing can be one of the most crucial procedures in a filtration process and may be an essential requirement for batch release of a product.

Such equipment then, must be qualified and suitably documented to ensure that it satisfies both process and regulatory requirements.

Pall has over 20 years experience in the design, manufacture and qualification of PALLTRONIC® integrity test equipment.

Our approach to instrument qualification minimizes time and costs to quite simply make instrument qualification easier for you.



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### Process Specific Validation

Pall fully understands the stringent regulatory demands for filter validation documentation in the Biopharmaceutical industry and maintains a comprehensive global filter validation service to help meet these requirements.

Many of Pall's validation laboratories are stand-alone facilities where specialists trained in GMP principles perform only specific customer tests. To date, in excess of 2000 customer validation studies have been completed in these facilities.

First time regulatory approval of the filtration validation package is our mission. Pall's close links with industry and the regulatory agencies ensure we are always up-to-date with the latest techniques and approaches thus helping to achieve this goal.

### Brewery Audit

Within Pall Corporation is a group dedicated to serving the very specific needs of the brewery industry. This team, with their in depth knowledge of the brewing process, is uniquely capable of providing the best solutions for beer specific filtration processes, separation systems and audit services.

Our specialists understand that inefficient handling and disposal of beer and related fermentation liquors can significantly increase your costs and lead to regulatory problems. We have the expertise and experience to analyze your application, provide recommendations and implement solutions to solve your brewery problems. For example, understanding water quality needs and proper implementation of filtration into the process can save money and may allow the reuse of some waters.

A brewery audit may reveal processes that can be streamlined or even result in the complete removal of redundant processes. The focus will be on quality assurance in order to enhance brand protection.

### Cleanliness Audit

Efforts by manufacturers to extend warranty coverage require that critical components used in vehicles and equipment are free of contaminant. The presence of built-in particulate contamination on these high performance components can result in abrasive wear of dynamic surfaces, erosion of metering surfaces in valves, and jamming in valves. This is further exacerbated at higher temperatures, pressures and cycle rates, and the degradation of working clearances can have a very significant impact on component reliability and performance in fuel, transmission and engine lubrication systems.

Pall has decades of experience and technical leadership in the area of dynamic clearance protection and related diagnosis and evaluation of contaminants and their behavior. With a cleanliness audit and the subsequent recommendations we can help achieve the objective of ensuring the long term durability and reliability of high performance equipment and components.



*Pall's worldwide network of testing and analytical laboratories*

**Principal Sites:**

USA - Port Washington, New York    United Kingdom - Portsmouth    Japan - Tsukuba

**Regional Sites:**

Argentina - Buenos Aires	India - Mumbai (Bombay)	Thailand - Bangkok
Australia - Melbourne	Indonesia - Jakarta	USA - Ann Arbor, Michigan
Austria - Vienna	Italy - Milan	USA - Chicago, Illinois
Belgium - Brussels	South Korea - Seoul	USA - Cortland, New York
Brazil - Sao Paulo	Malaysia - Kuala Lumpur	USA - Detroit, Michigan
Canada - Toronto	Mexico - Mexico City	USA - Fresno, California
China - Beijing	Philippines - Manila	USA - Houston, Texas
China - Guangzhou	Poland - Warsaw	USA - Livermore, California
China - Shanghai	Puerto Rico - Fajardo	USA - Los Angeles, California
France - Paris	Russia - Moscow	USA - Northborough, Massachusetts
France - Bazet	Singapore	USA - Pensacola, Florida
Germany - Bad Kreuznach	South Africa - Johannesburg	USA - Timonium, Maryland
Germany - Crailsheim	Spain - Madrid	
Germany - Frankfurt	Switzerland - Basel	
Germany - Waldstetten	Taiwan - Hsinchu	



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Pall Corporation has offices and plants throughout the world in locations including: Argentina, Australia, Austria, Belgium, Brazil, Canada, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Poland, Puerto Rico, Russia, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, United Kingdom, United States, and Venezuela. Distributors are located in all major industrial areas of the world.

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