



Pall Corporation

www.pall.com

Contamination Control

For the Pulp and Paper Industry



Filtration. Separation. Solution.SM

Introduction

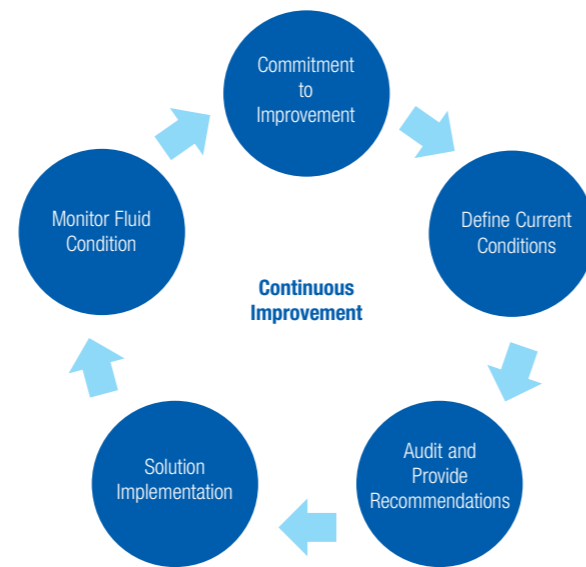
Pall Corporation has been servicing the pulp and paper industry for over 30 years and is recognized as the leader in filtration science through advancing technologies that improve the reliability and availability of process fluids to reduce total cost of operation.

Asset Reliability and Process Improvements through Contamination Control

In today's business climate, the pulp and paper industry needs suppliers that can offer a comprehensive approach to asset protection and process optimization. The machinery and equipment in operation in pulp and paper mills are highly dependent on the proper control and maintenance of fluids to desired operating conditions.

Our approach is simple

- ▶ Asset / Process review and priority setting
- ▶ Define current conditions and objectives
- ▶ Audit and provide recommendations
- ▶ Implement and train plant personnel
- ▶ Monitor and quantify system performance
- ▶ Review established goals and adapt as required



Pall's Range of Capabilities and Services

Contamination Control Seminars - Pall Corporation provides on-site training to educate plant personnel on the harmful effects of contamination on hydraulic and lubricating equipment.

Typical subjects include:

- ▶ Sources of contaminant ingress for hydraulic and lubricating systems
- ▶ Measuring contamination levels
- ▶ Filtration Fundamentals
- ▶ Sources and control of water & air contamination
- ▶ Fluid Cleanliness Management



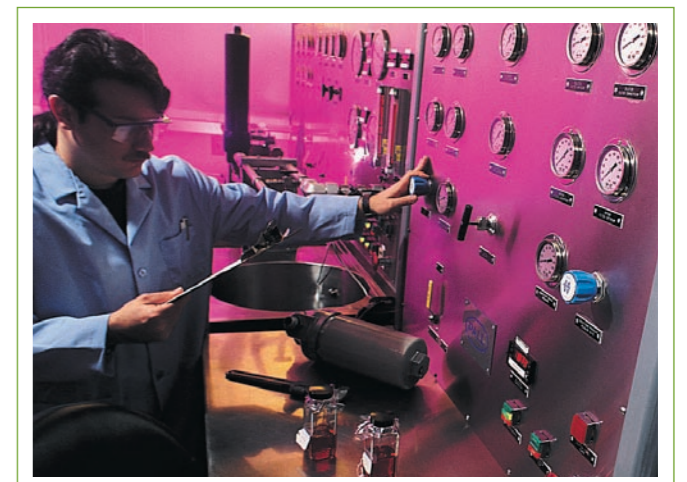
Field Service - Pall Corporation provides services to our customers through a highly trained workforce both at the local level and from industry specialists. Our services include:

- ▶ Process, hydraulic and lubrication system audits
- ▶ Fluid and system analysis to improve asset reliability
- ▶ System Inspection and troubleshooting
- ▶ Oil purifier training and commissioning
- ▶ Inventory management



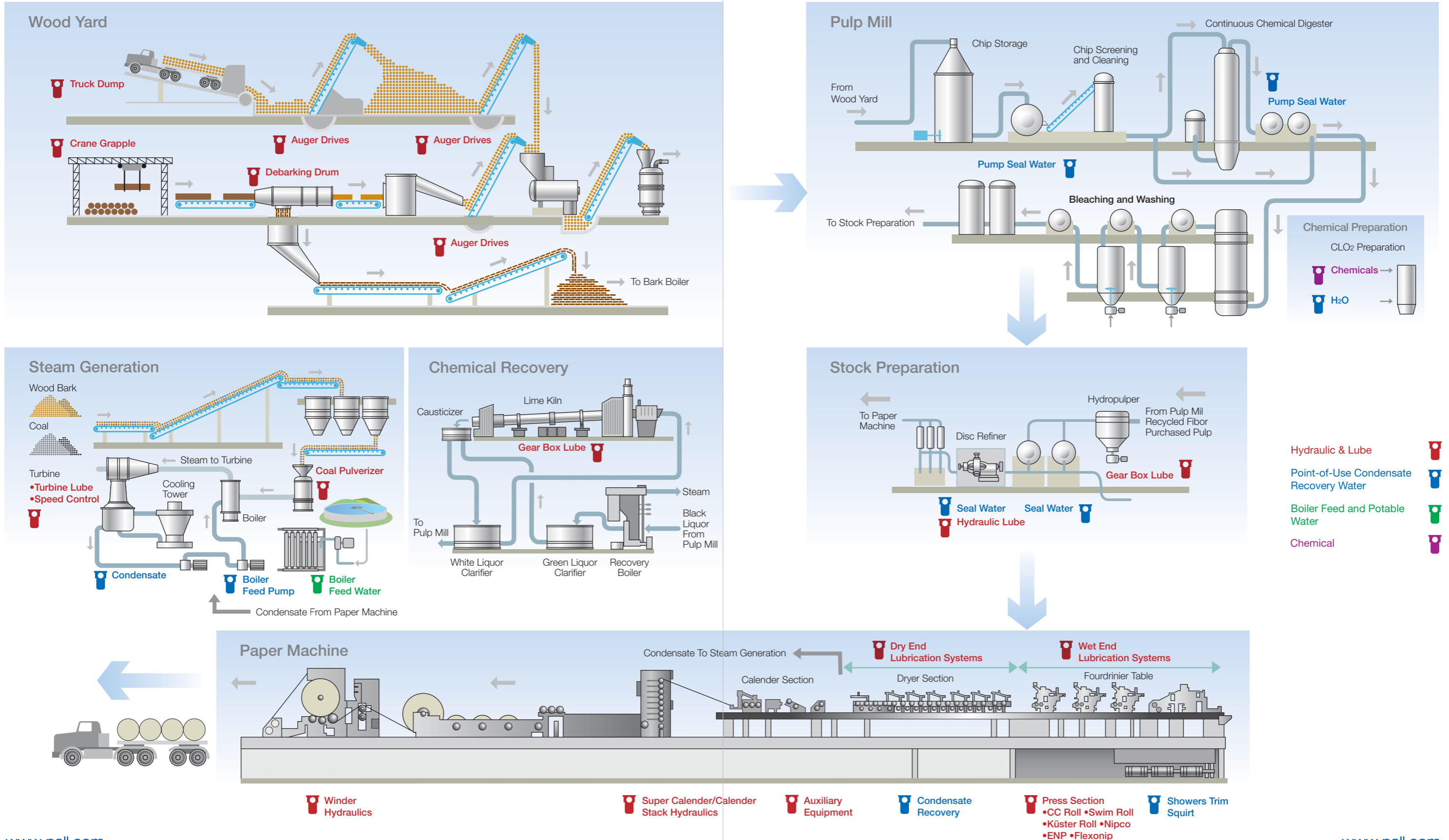
Scientific and Laboratory Services - Pall Corporation has a broad range of scientific and laboratory services throughout the world to support our customers' contamination control issues. The Pall SLS team provides the following services:

- ▶ Analytical support for solving process upsets that may impact production, filter and component life
- ▶ Technical support for commissioning new applications
- ▶ Filterability studies to evaluate best technologies to meet customer requirements
- ▶ Quality assurance for ongoing products



Pulp and Paper Process

From hydraulics to lubrication, recycled waters and chemicals to boiler feed water, the reliability and availability of a pulp and paper mill can be improved by the proper selection of filtration technologies that ensure consistent levels of contamination control throughout the paper manufacturing process. Pall products are designed to provide the highest level of protection from beginning to end of service life. The diagram below depicts some of the target applications in the paper making process.



Hydraulic and Lube Filtration

Ultipleat® SRT Filters

Pall Ultipleat® SRT filters combine an innovative filtration media pack design and stress-resistant filter element construction to provide:

- Superior contamination control over the full service life of the filter element
- Enhanced performance under cyclic flow and pressure conditions
- Optimum service life and envelope size
- Excellent overall protection for your hydraulic and lubrication equipment



Ultipleat SRT filter housing range

Fluid Purifiers

Fluid Conditioning Purifiers - integrate the latest features in fluid purification technology making it even easier to maintain proper fluid conditions. Pall purifiers remove 100% of free gases and water, up to 80% of dissolved gases and water and incorporate Ultipleat SRT filter technology for high performance particulate removal.



HNP022 Series Fluid Purifier



HLP22 Series Fluid Purifier

Diagnostic Equipment

Monitoring hydraulic and lubricating fluid condition is vitally important to a predictive maintenance program. Pall has pioneered new technologies that allow more reliable condition monitoring that enable plant personnel to take corrective actions.

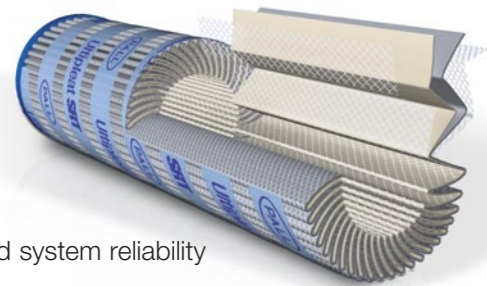


WS08 Water sensor

PCM Cleanliness Monitor

Benefits:

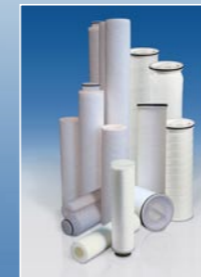
- Increased system reliability
- Reduced operating costs
- Reduced filtration costs
- Environmentally friendly disposal



Process Fluid Filtration Products

Melt Blown Filtration Products

Pall Corporation has pioneered many new filter technologies to meet the demands of various process fluids. Pall 'melt blown' technology is an innovative process of extruding fibers to produce the desired media profile to optimize filter performance. The comprehensive filter element range is available in depth, fan pleat and patented laid over pleat (Ultipleat®) designs.



Melt Blown Capabilities



Marksman™ Filter Elements



Nexis® Filter Elements



Process Fluid Filter Housings

Condensate Recovery Water Products

Pall material science engineers have developed a number of innovative filter products that can operate at elevated temperatures and process conditions. A range of synthetic and inorganic products are available to meet these challenging process conditions in a cost effective manner.

Rigimesh® Filter Elements



Boiler Feed and Potable Water Products

Pall Aria™ micro-filtration (MF) water treatment systems have become an industry standard for removing pathogens, turbidity, iron, manganese and other contaminants from surface waters. Pall Aria™ systems are available as stand-alone packages or can be combined with Reverse Osmosis (RO) systems to produce high quality boiler feed water. The combined MF/RO package can be sized for plant expansions or as part of a complete water treatment system for the plant.



Pall Aria Water Treatment System



Pall Corporation has become the global leader in the high-tech filtration, separation, and purification industry by meeting the diverse needs of customers across the broad spectrum of life sciences and industrial markets. Our highly-engineered process solutions protect people and critical assets, while minimizing emissions and waste.

Global demand for our solutions is driven by water and energy needs, imperatives for quality and productivity, high-tech products and processes, increasing regulations and rising standards of living. We have both the global reach and local technical support to meet this demand. Customers choose Pall for our expertise, product quality, innovation and financial strength. It is the ability to deliver for both our customers and shareholders that sets Pall apart.

Environmental Recognition

Newsweek Green Ranking (October 2012). Pall was named for the third time, one of the greenest companies in America by Newsweek magazine. Pall was ranked 6th in the Industrial Goods sector and 108th among Newsweek's U.S. 500 List.

Technology Recognition

National Inventors Hall of Fame (2008) Dr. David B. Pall, founder of Pall Corporation, was inducted into the National Inventors Hall of Fame. Dr. Pall's body of work in the field of filtration science earned him a place among legendary innovators including Alexander Graham Bell, Walt Disney, Thomas Edison and Henry Ford.

Scientific and Laboratory Services

A principal element in Pall's customer support operations is our Scientific and Laboratory Services (SLS) Department.

Filtration problems arising in the field can be assessed and simulated in the laboratory. Close monitoring by Pall scientists can determine the engineered solution to your contamination and separation problems and advise accordingly.



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Better Planet.**

To see how Pall is helping enable a greener, safer and more sustainable future, visit www.pall.com/green.

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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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