



Fuels and Chemicals

Serving the

**Chemical**

**Oil/Gas**

**Olefins/Polyolefins**

**Polymer**

**Refinery**

**Markets**

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

# Serving the Chemical, Oil/Gas, Olefins/Polyolefins, Polymer, and Refinery Markets

## Company Description

Pall Corporation is the global leader in the field of filtration, separation and purification. For over 60 years, Pall has been solving complex contamination, separations, and purification problems for customers around the world. Pall's products and services enable customers to meet regulatory requirements and increase output and revenues, while reducing total cost of ownership. Pall's technologies help make our customers' processes more reliable, and their products better, safer, and in some cases even possible.

Pall is much more than a filter company. Pall is a company of fluid management specialists. At the center of Pall's capabilities is its extensive array of proprietary core materials. These materials are used to separate, remove, or selectively capture the most elusive contaminants.

Pall has the unique ability to design, manufacture, install, and service integrated systems that cost-effectively treat incoming water, process water, and waste streams. Pall is able to do this for a variety of customers throughout the world.

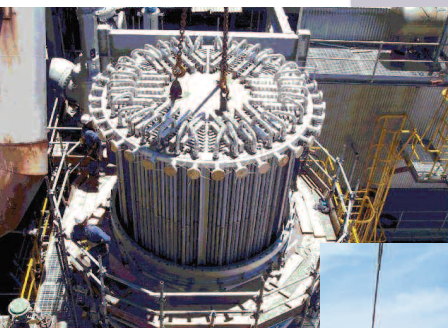
## Global Presence

Pall is headquartered in Port Washington, New York and has extensive operations throughout the world. Pall employs more than 10,000 people worldwide. Manufacturing facilities that serve the Fuels and Chemicals group are strategically located in the United States, Puerto Rico, England, China, and India.

## Technology and Service

Pall offers a wide range of technologies and services for the chemical, oil/gas, olefins/polyolefins, polymer, and refinery markets. A partial list of these technologies includes:

- ✓ Backwash filtration systems
- ✓ Blowback gas/solid separation systems
- ✓ Catalytic blowback filter systems
- ✓ Centrifugal discharge filter systems
- ✓ Ceramic membrane filters
- ✓ Disposable filters
- ✓ High flow disposable filters
- ✓ Hydraulic and lubrication systems
- ✓ Integrated membrane systems for water treatment
- ✓ Liquid/gas coalescers
- ✓ Liquid/liquid coalescers
- ✓ Microfiltration, ultrafiltration, nanofiltration, and reverse osmosis systems
- ✓ Oil purifiers
- ✓ Oil/water separators
- ✓ Porous metal filters
- ✓ Pressure leaf filters
- ✓ Process audits, pilot testing and consulting services



*Blowback filter system*



*Ultipleat® high flow filter system*

## Technologies for a Broad Range of Markets and Applications

Regardless of your specialization, Pall has filtration and separation solutions to meet your needs. Pall offers a variety of cost-effective solutions for specific market applications.



### Chemical

Aromatic derivatives; Bulk chemical filtration; Chlor-alkali; Dyes and pigments; Ethylene; Halogenated organics; Hydrogen peroxide; Nitrogen industry; Silica-based products; Specialty chemicals

#### Applications

- Boiler feed water
- Catalyst and salt recovery
- Deionized (DI) water filtration
- Emission control (e.g. particulate matter, NOx, SOx)
- Feedstock filtration
- Fermentation broth clarification
- Final product filtration/clarification
- Hydraulic and lubricating fluids
- Minerals processing
- Phase separation (liquid/liquid)
- Protection of burner nozzles
- Protection of turbo machinery
- Purification of feedstocks and water
- Quench water
- Reactants
- Solids dewatering
- Wastewater treatment

#### Products and Services

- Backwash filtration systems
- Blowback gas/solid separation systems
- Catalytic blowback filter systems
- Ceramic membrane filters
- Contamination control training and education
- Liquid/liquid coalescers
- Marksman™ high capacity filters
- Pall Aria™ microfiltration and ultrafiltration systems
- Process auditing and equipment surveys
- Rigimesh® porous metal filters
- Ultipleat high flow filters
- ZEF Contiflux® continuous pressure leaf filters
- ZHF Centrifugal discharge filter systems



### Oil/Gas

Coal seam methane; LNG plants; Oil and gas production plants; Oil services; Offshore platforms (topside, subsea)

#### Applications

- Black powder removal
- Buffer seal gas recovery
- Compressor outlet gas filtration
- Compressor protection
- Contamination control for LNG production
- Fuel gas treatment
- Gas condensate separation
- Gas metering station protection
- Gas reinjection
- Gas transmission pipeline filters
- Gas treatment/amine sweetening processes
- Gas turbine gas or liquid fuel filters/coalescers
- Gas-gas separation membrane protection
- Glycol contactor fouling and foaming
- Heating medium loop filter
- Hydraulic control and lube oil systems
- Hydrocarbon condensate filtration and dewatering
- Liquid fuel systems
- Mercury guard bed protection
- Mol sieve protection
- Potable water
- Produced water treatment
- Sea water and CSM produced water desalination
- Sea water injection
- Sulfate removal
- Wastewater treatment for disposal or reuse
- Water injection (enhanced oil recovery)

#### Products and Services

- AquaSep® liquid/liquid coalescers
- Contamination control training and auditing
- Coreless Profile® filters
- Disposable filters – Claris® filters, Nexis® filters, Profile II filters
- Heating medium filters – Profile A/S filters, DFT Classic® filters, PSS® filters
- HNP, HXP lube oil vacuum purifiers
- Lucid™ separator
- Marksman high capacity filters
- Pall Aria microfiltration and RO water systems
- PhaseSep® liquid/liquid coalescers
- Process auditing, troubleshooting and training
- Sales gas filters – MCC1401 filters, Coreless filters
- SepraSol™ liquid/gas coalescers
- SepraSol Plus liquid/gas coalescers
- Ultipleat high flow filters
- Ultipleat SRT filters
- Ultipor® III lube oil and hydraulic filters
- Ultipor SRT lube oil and hydraulic filters

## Technologies for a Broad Range of Markets and Applications



### Olefins/Polyolefins

Ethylene glycol; Ethylene oxide; Propylene glycol; Propylene oxide; Polyols

#### Applications

- Cold box protection
- Cr catalyst preparation
- Feedstocks filtration
- Final products filtration
- Fuel gas for burner protection
- Guard filtration
- Molecular sieves
- Polymer product recovery
- Process water
- Removal of green oil
- Resin feed filtration
- Salt recovery in polyol production

#### Products and Services

- Blowback gas/solid separation systems
- Coreless Profile filters
- Epocel® filters
- High flow gas filters
- Liquid/liquid coalescers
- SepraSol Plus liquid/gas coalescers
- Ultipleat high flow filters
- ZHF Centrifugal discharge filter systems



### Polymer

Acrylics; Aramids; Cellulosics; Engineered resins; Fluoropolymers; Polyacrylonitrile; Polyamides; Polycarbonate; Polyester; Polyethylene; Polypropylene; Polystyrene; Polysulfone; Urethanes

#### Applications

- DI water
- Melt polymer filtration
- Monomers, solvents, co-monomers, initiators, and raw materials
- Nylon salt prefilter
- Nylon salt polishing filter
- Pigment and additive slurries
- Polymer dopes (solution polymer)
- Polymer intermediates (pre-polymer/oligomer)
- Prefiltration of reactor feed streams
- Spin pack filtration

#### Products and Services

- Contamination control training and education
- CPF System® polymer candle filter systems
- Dynalloy® sintered metal polymer candles
- Dynalloy leaf disc filters
- PMF™ metal fiber filters
- Process auditing and equipment surveys
- Profile II filters
- PSS stainless steel filters
- Rigmesh porous metal filters
- Segloy polymer segment filters
- Segloy Plus polymer segment filters
- Segmax™ polymer segment filters
- Segmet™ polymer segment filters
- Ultipleat polymer candles
- Ultipor GF Plus filters

## Technologies for a Broad Range of Markets and Applications



### Refinery

Alkylation units; Amine treatment units; Aromatics extraction units; Catalytic reformers; Caustic treatment units; Crude distillation units; Final product blending; Fluid catalytic crackers; Hydrotreaters and Hydrocrackers; Sour water stripper units; Water and wastewater treatment plants

#### Applications

- Amine treatment and foaming prevention
- Ammonium chloride removal
- Analyzer protection
- Boiler feed water treatment
- Caustic treatment
- CCR – precious metal catalyst protection
- CDU overhead corrosion reduction
- Dehazing LPG, diesel, kerosene, and gasoline
- Desalter debottlenecking
- Effluent treatment
- FCCU flue gas filtration
- FCC hopper vent filters
- FCC slurry oil clarification/upgrading
- Fuel gas burner nozzle protection
- Fuels final product filtration
- Heat exchanger protection
- Hydroprocessing fixed bed catalyst protection
- Hydrogenation unit catalyst protection
- Lubrication and hydraulic system protection
- Mercury guard bed protection
- Mol sieve/PSA dryer protection
- Oily water treatment
- Post mol sieve/PSA dust filters
- Process analyzer protection
- Recycle gas compressor protection
- Salt dryer/clay tower protection
- Seawater desalination
- Slops treatment/reprocessing
- Solvent loop filters – BTX units
- Sour water stripper protection
- Syngas clean up – gasification
- Water purification

#### Products and Services

- Amine and sulfur plant reliability program
- AquaSep liquid/liquid coalescers
- Blowback gas/solid separation systems
- Consulting, plant audits, and troubleshooting services
- Coreless gas and liquid filters
- Dia-Schumalith® ceramic blowback systems
- Disposable filters – Claris filters, Hi-V® filters, Nexis filters, Profile II filters
- GSS high temperature automatic blowback filters
- HNP, HXP lube oil vacuum purifiers
- Lucid separator
- Marksman high flow disposable filters
- MCC1401 gas filters
- Pall Aria MF water treatment and RO systems
- PhaseSep liquid/liquid coalescers
- Plant pilot studies
- Profile A/S high temperature disposable filters
- Rigmesh automatic backwash filters
- SepraSol liquid/gas coalescers
- SepraSol Plus liquid/gas coalescers
- Utlipleat high flow filters
- Ultipor HT high temperature filters
- Ultipor III lube oil and hydraulic filters
- Ultipor SRT lube oil and hydraulic filters

## A Commitment to Customer Support and Product Excellence



Pall recognizes that each application is unique and requires careful planning, layout, design, and testing prior to delivery. During the development phase, we work closely with our customers to understand their requirements. After installation, we monitor start-up to detect any possible problems and if detected, we resolve them quickly to get up to full-scale production speed in a hurry. We remain on standby to assist our customers should the need arise.

One area Pall has been focusing on is ways to enable the alternative and renewable fuels markets through increased process efficiency. This demonstrates Pall's leadership by providing global solutions that maximize the potential for reducing the world's reliance on petroleum. Pall is collaborating on a wide variety of

applications in various stages of development for alternative and renewable fuel processes including: BioDiesel, 1<sup>st</sup> and 2<sup>nd</sup> generation BioEthanol including Cellulosic, BioButinol, Green Diesel, BioMass Gasification, Pyrolysis, Gas to Liquids (XtL), Algal BioProcesses, BioReactor BioCrude and Fermentations.

With offices in more than 30 countries, Pall is well positioned to provide assistance to customers on the local level, as well as offer broad-based, worldwide support when needed. At the core of our support network is our Scientific and Laboratory Services (SLS) department, an extensive global network of scientists and engineers who are experts in their field.

We invite you to learn more about Pall's wide array of products and customized services for Total Fluid Management<sup>SM</sup>. Contact your Pall representative or visit us on the web at: [www.pall.com](http://www.pall.com).



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