

## Filtration & Separation

Design • Engineering • Manufacturing • Total Systems Integration  
Gases • Solids • Liquids • Filtration Services

# ENGINEERED SYSTEMS

**NATIONAL FILTRATION SYSTEMS** is a leader in the supply of process equipment for the natural gas production and transmission, power generation, and general processing industries. Our in-house staff of experienced engineers partner with customers to design unique, cost-effective approaches to your most demanding process needs. The design phase is just the beginning – **NATIONAL FILTRATION SYSTEMS** is an integrated, total-capabilities manufacturer. **NATIONAL FILTRATION SYSTEMS** brings your ideas to life in a deliverable product ready to go online, on time. Our project management team oversees the entire design, approval and production process to ensure that all of your requirements are met. From a small heater package for your aeroderivative combustion turbine to a complete filtration/separation system for your process needs, **NATIONAL FILTRATION SYSTEMS'** engineers have the solution for you.

## Project Management

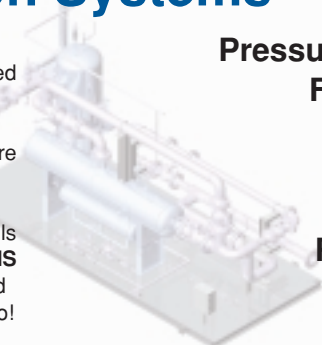
In-house project managers handle every aspect of your project, from initial design and development through manufacturing, delivery and commissioning. Our project managers are your interface with **NATIONAL FILTRATION SYSTEMS**. They will communicate with you and work to ensure that we exceed all of your requirements.

**Chemical Processing**  
**Natural Gas Production & Distribution**  
**Refining**  
**Power Generation**  
**Petro-Chemical**  
**Industrial Gases**  
**Pulp & Paper**  
**Utilities & Power Plants**



## Pre-Assembled Filtration and Separation Systems

**NATIONAL FILTRATION SYSTEMS** can engineer and build pre-assembled and tested process systems that can be delivered to your job site ready to go. No more lost components. No more waiting to find out allowable nozzle loads. No more looking for the installation manual. Leave all the details to **NATIONAL FILTRATION SYSTEMS** and have your tested, pre-assembled system delivered on time, ready to go!



**Pressure Regulating Stations**  
**Flow Metering Systems**  
**Heating Modules**  
**Pumping Stations**  
**Fuel Forwarding Skids**  
**Receivers, Drain Tanks**  
**Custom / Proprietary**



## Modular Skid Systems

**NATIONAL FILTRATION SYSTEMS** designs and manufactures modular skids that can easily be tied together once the units arrive at your facility. When your process system is too large to fit on just one skid, **NATIONAL FILTRATION SYSTEMS** has your solution.



**Landfill Gas Conditioning Systems**  
**Primary Pressure Regulating Systems**  
**Fuel Gas Conditioning Systems**  
**Secondary Pressure Regulating**  
**Compressed Air Systems**  
**Flow Metering Systems**  
**Custom Applications**



Developing unique  
solutions to your most  
difficult challenges.

# LIQUID FILTRATION & SEPARATION

## Liquid Filter Vessels

ASME Code and Non-Code simplex vessels and duplex systems for a variety of industrial filtration applications.

**Filtration Efficiencies to meet critical applications**

**Flows to 3000 GPM**

**Pressures to 5000 PSI**

## Transfer Valves

HYCOA's patented design is the leader in transfer valve technology. Utilizing the HYCOA "zero-leak" valve ensures positive indication and optimum performance in critical applications.

**Construction in CS, 304 SS, 316 SS**

**Sizes from 1 1/2" to 10"**

**Easy Retrofit for Kraissl, HILCO and HAYWARD**



## Filter Systems

Standard and Engineered Side-Arm Filter Systems. Self-contained rugged industrial systems utilizing a variety of cartridge elements and/or filter bags.

**Standard Flows to 20 GPM**

**Stationary or Portable**

**Hi-Flow and Custom Configurations**



## Liquid Bag Vessels

Standard Bag housings in a variety of sizes to meet application flow rates. Rugged construction utilizing a complete line of filter bags, strainers and inserts.

**Construction in CS, 304 SS, 316 SS**

**Pressures to 5000 PSI**

**ASME Code compliance available**



## Hydraulic & Recirculating Oil Systems

Hydraulic and Lube Oil Systems for critical industrial, automotive and commercial applications. Systems and controls designed to customer specifications and applications.

**Operating pressures to 5000 PSI**

**Flow rates to 3000 GPM**

**Meets API specifications**



## Diversion Valves

HYCOA's 3-Way Diversion Valve incorporates an interflow design which requires no external actuator. The valve assures smooth, positive, uninterrupted high volume flow diversion and pump unloading.

**Eliminates "system shock & water hammer"**

**Wide range of sizes from 2" to 20"**

**Lowers overall piping costs**



**HYCOA capabilities in filtration, hydraulic system design and construction, diversion valves, air/oil lubrication systems, ISO modules and manifolds and SAE Flanges provides a diverse product line serving industries worldwide.**

# GAS FILTRATION & SEPARATION

## ANDERSON SEPARATOR (Mechanical Type)

From 1/4" NPT up, **ANDERSON SEPARATOR** has the mechanical separator for you. These units require no maintenance and deliver unprecedented liquid and solids removal efficiencies. **ANDERSON SEPARATOR** uses many different types of separating elements in order to meet your needs. If you do not see the arrangement that you need in our catalog, consult the factory for your specific requirement.

## Vane Type



**ANDERSON's** "Pocket Style" vanes are ideal for liquid removal to 8 microns. Available in standard 316 stainless steel and other materials to meet your application requirements.

**In-Line Vertical**  
**In-Line Horizontal**  
**Vertical Gas**



## Centrifugal



**ANDERSON's** line of standard and custom centrifugal units are excellent for your air and steam separation needs.

**Vertical Up Flow**  
**In-Line**  
**Exhaust Heads**  
**Combination Separator Traps**  
**Internal Steam Drum Purifiers**



## Multi-Cyclone



When your application requires **HIGH EFFICIENCIES** for both solids and liquids - the AMCS is the solution.

**In-Line Vertical**  
**In-Line Horizontal**  
**Vertical Gas**



**ANDERSON**<sup>®</sup>  
Separator

Anderson Separator offers stock mechanical separators for immediate delivery and custom engineered units for your most rigorous specification.

# GAS FILTRATION & SEPARATION

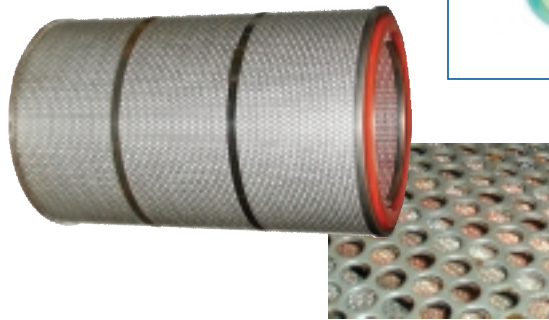
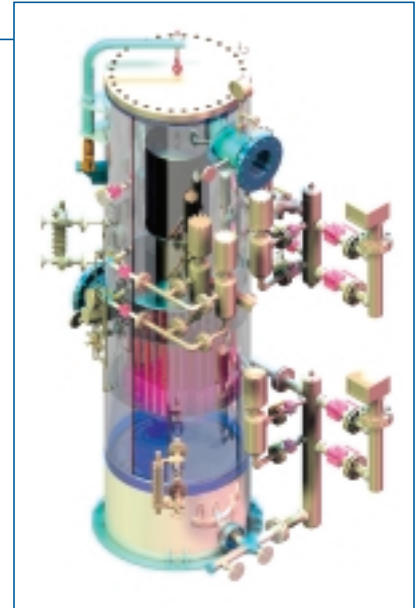
## Coalescing Separators

When your application calls for removing both liquids and solids smaller than 3 microns, **ANDERSON SEPARATOR** is your solution. We offer a wide range of media and element configuration to meet your most demanding needs. **ANDERSON SEPARATOR** manufactures its own line of coalescing and filter elements - delivering your requirements accurately, quickly and economically.



Vertical and Horizontal  
Coalescers and Filters

Multi-Stage and  
Single-Stage Designs



## Filter Separators

**ANDERSON SEPARATOR** is the source for all your filter separation needs. Our unique approach to filters combined with engineering and manufacturing capabilities offer you the most affordable and reliable separator.



High Temperature Elements

Small Line-Type Units

Multi-Stage Designs

Custom Designed



# REPLACEMENT FILTRATION ELEMENTS

## Chemicals • Gases • Fuels • Oils • Steam • Water

Clark-Reliance Filtration Group offers premium-quality, reliable filter elements for all industries. Our liquid and gas filter elements are designed with an emphasis on economy, strength, performance and service life.

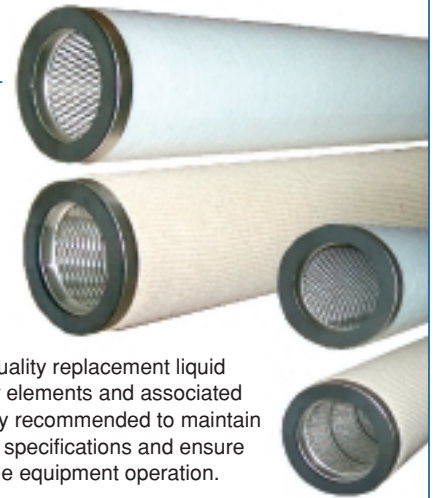
### Liquid Filter Elements

Micron Ratings from 1  $\mu\text{m}$  to 25  $\mu\text{m}$

Beta Ratings  $\geq 200$

High Efficiency Dualglass Media

High Capacity Prefilter Layer



The use of quality replacement liquid and gas filter elements and associated parts is highly recommended to maintain performance specifications and ensure safe & reliable equipment operation.

### Gas Filter Elements



Duplexed Horizontal Filter/Separator



Multiple Layers

Micron Ratings from 0.3  $\mu\text{m}$

Liquid Coalescing up to 99.98% Removal Efficiency

Custom Sizing for Specific Requirements

### Industrial Filter Elements Replacement Filter Bags



Variety of Bag Sizes and Fibers with Multi-layer Capabilities. Ratings from 1  $\mu\text{m}$  to 1500  $\mu\text{m}$



Extensive Range of Standard Sizes and Media. Ratings from 1/2  $\mu\text{m}$  to 100  $\mu\text{m}$

### Mahle Filters



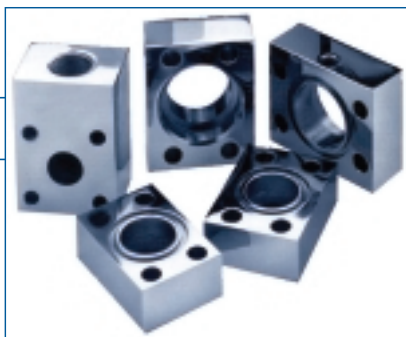
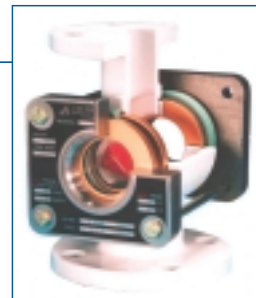
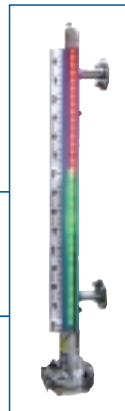
Mahle Filters: Suction Line, Low-pressure, Medium-pressure, Hydraulic Filtration, Air Application Filtration, Fluid Process Applications and Oil Separators in Compressors.

# INSTRUMENTATION



The Clark-Reliance Corporation offers a complete and complementary line of instrumentation & control products that are "in-house" and readily available. Industry-leading brand names and premium quality instrumentation ensures total performance and reliability with an emphasis on economy, strength, performance and service life.

- Liquid Level Gages \_\_\_\_\_
- Magnetic Level Gages \_\_\_\_\_
- Radar (TDR) Devices \_\_\_\_\_
- Sight Flow Indicators \_\_\_\_\_
- Magnetostrictive Transmitters \_\_\_\_\_
- Boiler Trim Controls \_\_\_\_\_
- Point Level Switches \_\_\_\_\_
- Valves of all Types \_\_\_\_\_
- Level Indicators \_\_\_\_\_
- Side Mounted Float Switches \_\_\_\_\_
- Level Switches \_\_\_\_\_
- Side Mounted Float Switches \_\_\_\_\_
- Capacitance Products \_\_\_\_\_
- Non-Contact Ultrasonics \_\_\_\_\_
- Non-Contact Switches \_\_\_\_\_
- Tuning Fork Switches \_\_\_\_\_
- Sight Windows & Lights \_\_\_\_\_
- External Cage Switches \_\_\_\_\_
- Steam Traps \_\_\_\_\_
- Ultra Sonic Transmitters \_\_\_\_\_
- SAE Hydraulic Flanges \_\_\_\_\_
- Electro-Mechanical Products \_\_\_\_\_
- Fluid Recovery Pumps \_\_\_\_\_





16633 FOLTZ PARKWAY  
STRONGSVILLE, OH 44149  
PHONE (440) 572-1500 • FAX (440) 238-8828

[sales@clark-reliance.com](mailto:sales@clark-reliance.com) • [www.clark-reliance.com](http://www.clark-reliance.com)



# LIQUID PURIFICATION SYSTEMS FILTERS • HOUSINGS • RENTAL FLEET FLUSHING SYSTEMS & SERVICES



## OIL FILTRATION SYSTEMS

A CLARK-RELIANCE COMPANY

INNOVATIVE SOLUTIONS FOR ALL YOUR FILTRATION NEEDS

# INDUSTRIAL FLUID PURIFICATION

Today's economic and environmental awareness presents unique opportunities for manufacturing and industrial companies around the world. Improving productivity and profits in an ever-increasingly competitive marketplace, while complying with stringent environmental standards can be one of the greatest challenges. Disposing of oil and other fluids is costly, but left untreated, contaminated fluids can lead to lost productivity due to equipment downtime and maintenance problems. By reclaiming fluids (removing all water, particulate and acid contaminants) you can extend the life of your equipment, reduce high maintenance costs and improve productivity and profitability.

## OIL FILTRATION SYSTEMS

designs, engineers and manufactures high quality oil, fuel and fluid filtration systems. Our systems provide innovative and environmentally sound solutions for purifying contaminated oils, fuels and many other fluids for a variety of industrial applications.

In addition to sales and rental of our systems and products, our highly qualified staff is prepared to work with you every step of the way, resulting in quality systems and peak performance. Call us today to find out how we can provide you with that edge you've been looking for to stay competitive in today's global marketplace.



**(800) 449-0262**  
www.oilfiltrationsystems.com

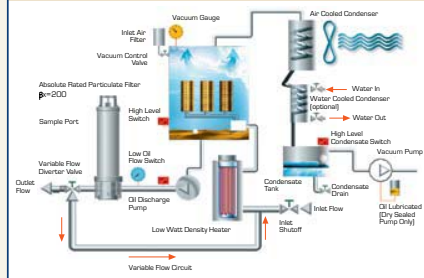


## Vacuum Dehydrators

The ultimate piece of equipment to effectively remove particulate, water and dissolved gases from petroleum and synthetically based fluids. This system removes 100% of free and emulsified water from oils, and 90% of dissolved water from oils to as low as 20 ppm. It also removes particulate to as low as ISO 12/10/9 with 2.5 Beta<sub>(C)</sub> ≥ 1000 Filters. In addition, this system removes 90% of dissolved gases. It is available in flow rates from 1–200 gpm, NEMA 4 and 7 Explosion Proof with custom options.



The water removal principle used in the Vacuum Dehydrators dependably removes water well below the oil saturation point, even when tightly bound in an emulsion. A vacuum pump draws fluid into the unit where it is heated and then flows through dispersal elements inside the vacuum tower. Contaminated oil flows through the pores of these elements, is exposed to the vacuum and dehydrated. Dried oil is removed, filtered and pumped back into the reservoir.



# F I L T R A T I O N S Y S T E M S

## High Flow Filter Skids

This system is ideal for rapidly removing particulate contamination from large reservoirs. Furthermore, this system creates turbulent flows in piping for oil flushing and efficiently removes particulate contamination to as low as ISO 12/10/9 levels. Flow rates are available from 50–2000 gpm with many quality features and additional options to increase its capabilities.



## Low Flow Filter Carts

When a compact and highly portable design is needed to remove particulate contamination and free water from smaller reservoirs, the Low Flow Filter Cart is your answer. Flow rates are available from 1 to 20 gpm with either spin-on or cartridge-style filter elements and water or acid removal filter options. NEMA 4 and NEMA 7 explosion proof options are available as well.

## Coalescers

Designed to rapidly remove water and particulates from diesel fuel, fuel oil and most other hydraulic/lubricating oils. Coalescing technology outperforms centrifuges, are simpler to use, cost less to maintain and are lower in initial purchase price. Designed to run continuously in an outdoor environment, virtually no mechanical maintenance is needed.



240 GPM Coalescer System

## LTC Transformer Filtration

Bolt this system onto a transformer and continuously remove particulate (carbon) and water contamination, maintaining high dielectric values. Ideally suited for kidney loop filtration applications.

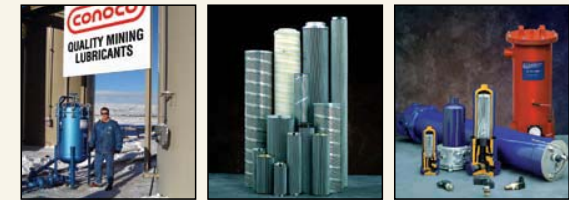


## Bearing Lubrication

This system will remove particulate and heat from bearing lube oils to increase bearing life. It will achieve particulate removal from fluids to as low as ISO 12/10/9. It is available with optional flow and temperature monitoring devices.



# FILTERS & HOUSINGS



## YOUR SOLE SOURCE FILTER SUPPLY

Oils • Fluids • Air • Gases • Fuels • Process • Industrial • Mobile

We stock the highest quality filter elements and filter housings at the most competitive prices:

- Synthetic media filters composed of micro-glass for high performance filtration.
- Water removal filters, acid removal filters, liquid fuel filters and air filters for process, mobile and industrial applications.

Our high efficiency filter elements are state-of-the-art and represent the best value in the industry today. With our extensive cross-reference list, we can supply upgrade filters for *all* your existing applications.

# S E R V I C E S



## Rental Fleet

We maintain a large rental fleet of systems in Boerne, Texas, for immediate deployment anywhere in the world at very competitive prices. Our professional and technical personnel are available for start-up and on-site training.



## Flushing Services

We will perform a turnkey flush on your site, providing all pumps, heaters, hoses and filters. Qualified technicians verify the results to required ISO cleanliness codes with our Portable Oil Analysis Kit.



# FLUID ANALYSIS

Quickly and reliably analyze an oil sample to determine the amount of particulate contamination using the Patch Test Method, assessing an ISO cleanliness code in as little as 10 minutes. Accessories needed to create formal reports (camera, adapter, etc.) are also available.

# Industrial Fluid Purification Common Applications:

**Turbine Lube Oil / Petro-Chemical Compressors / Diesel and Gas Fired Engines / Substation Maintenance  
Transformer Oil / EHC Speed Control Systems / Hydraulic Power Units for All Industries**



## Partial Client List

AEP  
Aker Kvaerner  
Alcoa  
Archer Daniels Midland (ADM)  
Austin Energy  
Barrick Goldstrike  
BF Goodrich - Fairbanks Morse Division  
Chevron  
ConocoPhillips  
Duke Energy/Flour Daniels  
ExxonMobil  
Freeport McMoran  
Flint Hills Resources  
General Electric  
General Motors - Allison Division  
Georgia Pacific  
Halliburton  
International Paper  
Kennecott  
NASA  
National Electric Company of Nigeria  
Newmont Gold  
Noble Drilling  
Peabody Energy  
Procter & Gamble  
Royal Caribbean  
Saudi Consolidated Electric Company  
TXU Electric



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