



# **FILTRATION SOLUTIONS**

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**Products & Services**



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**At HILCO® we know filtration.** We've seen many changes since our first oil reclaimer was built in 1925. The problems have become more complicated and the filtration techniques more sophisticated. Hilliard is first and foremost an engineering company. Every one of our products have been developed and tested by our dedicated engineering staff to bring fluid contamination problems under control.

Since developing our first filtration system, HILCO® has continued to revolutionize the filtration industry by developing products based solely on solving our customers complex filtration needs, and many of these solutions are still counted on today.

## **The HILCO® Advantage—**

### **Our products can:**

- Reduce the cost of new oil purchases.
- Decrease disposal costs.
- Help lessen component wear.
- Reduce downtime.
- Help curtail environmental contamination.

### **Our Capabilities Translate to Your Success:**

- Diverse raw inventory in stock
- Custom sizing available
- Center tube manufacturing machines
- Assembly capability exceeding 25,000 cartridges per month
- Same day fulfillment on most orders
- Custom orders produced in as little as 2 weeks
- HILCO® On Site Testing Facility for fluid analysis





# ▶▶▶ FILTER CARTRIDGES

## Pleated Cellulose PL

**HILCO® Microgard™** cartridges provide reliable, long-life contamination control. These efficient filter cartridges feature three filtration layers: outer cellulose-media layer for coarse filtration, an intermediate glass-media for microfiltration, and an inner cellulose-media layer for added support.



## Typical Applications:

- Close tolerance hydraulic
- Refrigeration compressors (tube & coolant)
- Gas turbines
- Centrifugal lubrication couplings
- High-pressure fluid filtration
- Test stands

**HILCO® Safeguard™** single-layer pleated paper cartridges are economical for use in applications requiring general filtration. Disposable cartridges feature molded urethane ends on various sizes. Plated metal end caps are also available with controlled radius pleats to maximize useable filtration area.



## Typical Applications:

- Hydraulic systems
- Test stands
- Diesel, gas, or dual fuel engines
- Compressors
- Paper machines
- Turbo chargers
- Low-pressure hydraulic
- Turbine lube
- Bearings

## Pleated Synthetic PH

These durable cartridges stand up to continued use without softening and deterioration as a result of exposure to water. The key is an advanced synthetic media that provides maximum filtration with minimum pressure drop.



## Typical Applications:

- Diesel, gas or dual fuel engine turbine lube





# ▶▶▶ FILTER CARTRIDGES

## Hilsorb Dryer Filter Cartridges

quickly and effectively remove solid and water contaminants from hydraulic, lube and insulating oils. The PD cartridge is made with a patented four-ply construction and is available in two efficiency ratings.

### Typical Applications:

- Transformers
- Circuit breakers
- Voltage regulators
- Load tap changers



## HP Hydraulic Fluid

HILCO® High-pressure hydraulic cartridges are engineered for 3000 PSI pressure. The ability to withstand high pressure permits placement in the high-pressure circuit to protect sensitive hydraulic components. Contains micro-glass filter media between protective screens.



## Saflow Stacked Disc

Saflow™ (DS) and Saflow™ D (DD) Cartridges withstand cold starts and high pressure differentials. These specially designed stacked disc cartridges provide protection at high pressure differentials brought on by cold starts and high viscosities. The stacked cellulose paper discs with labyrinth oil channels also provide depth filtration and high dirt-holding capacity.

### Typical Applications:

- Speed reducers
- Diesel, gas, or dual fuel engines
- Gas compressors with common lube systems
- Gun drilling
- Frequent cold starts
- Oil bath or air filters





# ▶▶▶ FILTER CARTRIDGES

## O-ring Sealed Cartridges

Housings for o-ring sealed CG cartridges are used for critical seal applications. O-rings provide a better seal, higher tolerance of misalignment, and greater compatibility with cartridge material. O-rings are more durable than standard flat gaskets with a higher resistance to heat and water.



## Coreless Cartridges cut costs

HILCO® coreless cartridges utilize a vessel with an integral center support that eliminates the need for the cartridge to have a built-in center core to support the element against differential pressure. Initial cost of the cartridge is reduced because it is made with a built-in metal center core. Fluid costs are reduced by maximizing fluid life through the use of high-efficiency filtration and long element life. And costs associated with disposal of used cartridges are minimized.



## Hilite® Cartridges for acid reduction for petroleum-based transformer and turbine lube oils

Hilite Cartridges feature a high-grade calcined fullers' earth media which is superior because of its greater water resistance. They provide a combination of neutralization and adsorption to remove acids, gums and other oxidation products to restore TAN and color. These cartridges come in various sizes and flow rates. These cartridges are recommended for acid reduction, to stop hydrolytic degradation and to promote fluid stability.

### Typical Applications:

- Transformers
- Vacuum pumps
- Diffusion pumps
- EDM machines
- Refrigeration compressors



# ▶▶▶ FILTER CARTRIDGES

## **Hilite-A Cartridges for acid reduction**

These cartridges feature a special activated alumina media for the adsorption of acids and other oxidation products from synthetic fluids and petroleum oil. A water-resistant media, activated alumina will minimize the forming of precipitates or gels when used with phosphate-ester fluids. Hilite-A Cartridges are available in various sizes and flow rates.



## **Typical Applications:**

- Hydraulic systems
- Transformers
- Vacuum pumps
- Diffusion pumps
- EDM machines

## **Selexsorb™ GT Cartridges are specially formulated for phosphate ester fluids**

Selexsorb™ GT is a patented adsorbent specifically designed for use with phosphate ester fluids such as AKZO Chemical's Fyrquel®. It maintains the original quality of fluids for prolonged periods, thus reducing the need for fluid changeouts and increasing equipment life. These cartridges feature metal ambients for added strength, as well as a polyester media retainer for both chemical resistance and media retention. Other features include lifting handles and lifting tabs for added convenience in handling.



## **Typical Applications:**

- Gas turbines
- Steams turbines
- EHC control systems

## **Mist Eliminator Cartridge**

At the core of every HILCO® Mist Eliminator is our highly developed Demister Cartridge which utilizes an inside out flow in order to trap the oil from the air stream and return it to the oil reservoir for reuse. The resulting clear air can be safely released to the atmosphere with no environmental impact whatsoever.

The HILCO® Oil Mist Eliminator provides many industries with an essential, reliable system to minimize the environmental impact of essential operations.

Utilizing HILCO's technology and oil mist elimination systems will help your facility exceed current and future environmental regulations set forth by the U.S. Government and the EPA. Furthermore by doing so, this will prove the commitment of your facility to protecting the environment and Going Green.





# ▶▶▶ FILTER CARTRIDGES



## Dry Resin Ion Exchange

HILCO® Dry Resin Ionic Exchange cartridges are a highly effective solution for reducing TAN level in phosphate ester fluids as well as reducing varnish potential in both mineral and synthetic fluids. HILCO's Dry Resin Ionic exchange is a cost effective treatment method when used in a kidney loop arrangement that has 7 times the acid scavenging capacity of Fullers Earth and nearly 3 times the capacity of Selexsorb while adding nothing to the fluid.



## Liquid Coalescing Cartridges

HILCO® coalescing systems are the ideal way to remove moisture contamination in any liquid fuel. HILCO® has been manufacturing coalescers for liquid fuels for over twenty five years. Systems are available with flow capacities as high as 1500 GPM (5700 LPM).



## Gas Coalescer / Separator Cartridges

The Hilcosep was designed to remove moisture and particulate contamination from steam and gas turbine lube oils. Self-sufficient stand-alone models with reservoir capacity ranging from 2,000 gallons to 12,000+ gallons and portable models as well as custom designs are available.



## Anti Static Cartridge

HILCO® PH-CGJ style filter elements incorporate conductive fibers which are co-pleated in between two layers of high-performance microglass filter media. As a result the HILCO® anti-static filter element dissipates static charge build up before discharge can occur. These style elements are available in every standard HILCO® media grade code.



## OEM Replacements

The reliability and efficiency of any filtration system is chiefly dependent on the quality of the cartridges used in it. We've worked hard to develop a full line of quality HILCO® cartridges for virtually every application. HILCO® can restore many oils and coolants to a like-new condition. Our full line of filter cartridges includes various sizes, filtration efficiencies and dirt-holding capacities. All of our filter cartridges are developed to provide long service life and high quality. HILCO® cartridges feature quality design and construction. We also make HILCO-quality replacements for other brands of cartridges used in lube oil and fuel oil applications.

# ▶▶▶ FILTER CARTRIDGES / MISC.

## Center Tube Adapters for cartridge economy

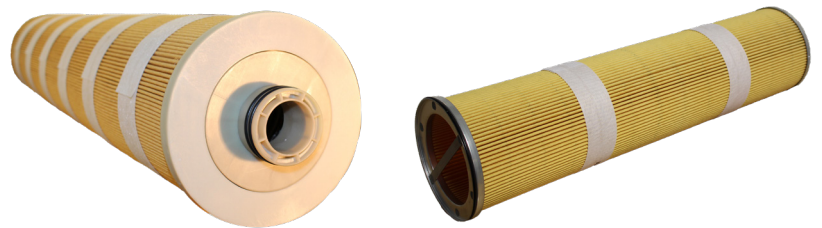
If you have an application that requires large quantities of cartridges, save up to 25 percent through the use of cartridges without integral center tubes. To do this, use our separate center tube adapter, which is available in sizes to fit 630, 718, and 736 cartridges.



## Process Filters

HILCO® process filter elements incorporate a proprietary blend of fibers which give a much better filter predictability and fiber stability with varying degrees of moisture contents. As a result, they have exceptionally high dirt holding capacities which significantly extend online service life or run time.

HILCO® features products for both new and existing applications and offers replacement elements for most popular sizes.



## Pleated Screen Filter Cartridges

The Pleated Screen Cartridge is a cleanable element with outside in flow. It is a direct replacement for a PL718 cartridge when cartridge disposal is a problem. Available in 10, 25, 40, 60, 74, and 104 micron absolute screen meshes, this cartridge survives in fluids and conditions where standard PL and PH Series cannot perform.



## Pleated Strainer Baskets

The Pleated Strainer Basket contains 3.7 times the area of a plain, cylindrical basket. Recommended for high solids applications. Features inside-out flow and can easily be cleaned by hosing off in a part washing tank, or with steam or a high-pressure water jet (car wash type). Typical applications include very dirty lube oils, heavy fuels, fuels with catalyst fines, machine tool coolants and cooling or process water.





# ▶▶▶ FILTER VESSELS

## Simplex Liquid Filters

HILCO® offers a wide variety of standard simplex filter products as well as custom engineered configurations for your individual application. We are an ISO 9001:2015 certified organization with a fully accredited weld shop which gives us the ability to manufacture and test a wide variety of filter arrangements. A range of materials of construction are available as well as a diverse offering of components and certifications based on your unique specifications.

## Standard Non-Code Housings.

Well-suited for off-line filtration systems, these housings can be used for o-ring sealed elements as well as Selexsorb, Hilite, Activated Alumina, and Ion Exchange elements. Features o-ring sealed covers, swing bolt cover hardware, carbon steel or 316 stainless construction, and 1" inlet and outlet.

## Bag Filter Housings.

HILCO® Bag Filter Housings feature o-ring sealed covers, swing bolt cover hardware, carbon steel or 316 stainless steel construction. Suitable for a variety of inlet and outlet configurations. Also available in duplex arrangement.

## Standard Housings for High Flow Synthetic Elements

These housings can be used for 312, 414, 518, 720, and 739 elements, for flows up to 2000 gpm. The 3/4" FNPT inlet and outlet are up to 1 O", 150# flanged. Housing features include ASME construction (non-Code also available), o-ring sealed covers, and carbon steel or 316 stainless steel.



SIMPLEX FILTERS

# ▶▶▶ FILTER VESSELS

## Duplex Integral Head Liquid Filter

HILCO® offers a wide variety of standard duplex filter products as well as custom engineered configurations for your individual application. Integral Head Duplex designs are available allowing for continuous flow during fluid transfer and cartridge change out. These cost and space saving integral head designs can be manufactured to accommodate liquid or gas pressures up to 3000 PSIG.

We are an ISO 9001:2015 certified organization with a fully accredited weld shop which gives us the ability to manufacture and test a wide variety of filter arrangements. A range of materials of construction are available as well as a diverse offering of components and certifications based on your unique specifications.



DUPLEX FILTERS



## Duplex Liquid Filter

HILCO® offers a wide variety of standard duplex filter products as well as custom engineered configurations for your individual application. Duplex full flow designs are available allowing for continuous flow during fluid transfer and cartridge change out with the added benefit of elimination of potential gasket leak points with our welded in valve design. Bolt in valve designs remain available.

## Duplex Liquid Filter—Custom Design

HILCO® can design and build liquid filter custom products for your individual application.

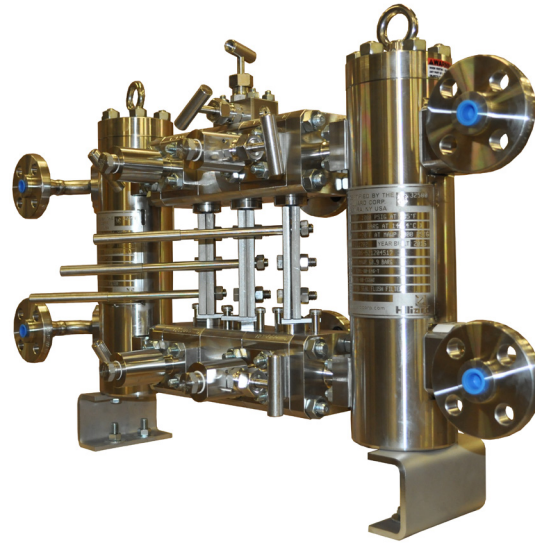




# ▶▶▶ FILTER VESSELS

## Seal Gas Filter/Coalescers

HILCO® offers several designs and sizes of seal gas filters for the purposes of particulate and liquid removal. Each one of our units is designed to the requirements provided by the customer. With our many years of experience, we are able to determine the best option for the application whether it is an initial startup or an aftermarket retrofit. HILCO® filters are available in simplex design and in duplex arrangements for continuous operation.

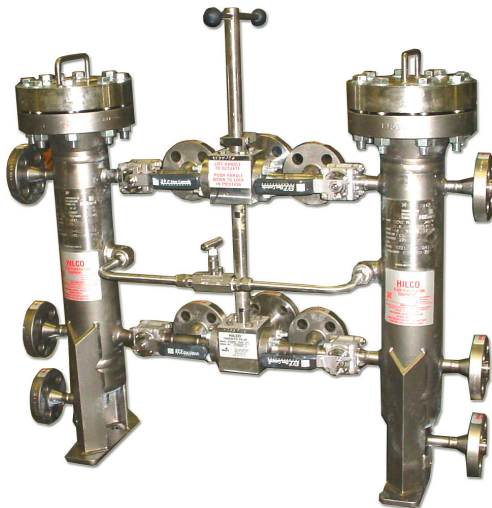


## Typical Applications:

- Gas Compression
- Mid Stream Gas
- Natural Gas Pipeline Transmission
- Oil & Gas
- Refinery

## Fuel Gas Filter/Coalescers

HILCO® manufactures complete fuel filtration systems which can incorporate all or any combination of these contaminate removal techniques. Put HILCO's expertise to work in solving your most difficult liquid fuel filtration needs.



## Typical Applications:

- Oil & Gas
- Power Generation
- Refinery

## Strainer Baskets to remove large particulate

For use in place of or in conjunction with Hilco filter cartridges, these strainer baskets are available in 5"x11" and 7"x18" sizes. They are useful as pre-filters for the removal of particles of 75 to 100 micrometers and larger.



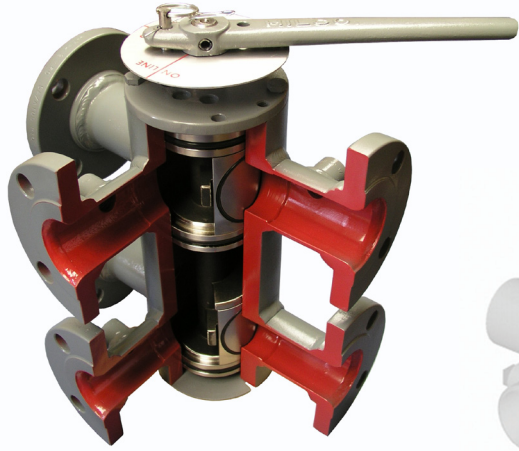
DUPLEX FILTERS

# ▶▶▶ VALVES

## HILCO® Transfer Valves

HILCO® Transfer Valves assure positive sealing for uninterrupted flow and a low pressure drop. They feature an innovative spring loaded pad and shaft design with large cross-section o-ring seals. Top and bottom covers with centering pilots provide support to the body to resist deformation from pipe strain. The turning mechanism features a choice of handle, wormgear or actuator designs to meet your requirements.

HILCO® also manufactures 3-way valves coupled together with a common actuator and handle for duplex cooler applications. This helps to minimize extensive piping runs previously required while at the same time, reducing overall costs.



## Six-Port Standard

HILCO® Transfer Valves are available in three configurations: three-way, six-port (same side and opposite side), and split three-way. Spring and pressure loaded pad design instead of plug—provides positive sealing to minimize leakage. Rugged, precision-machined, straight body heavy wall steel tubing for body material—minimizes valve distortion.



*Same Sided*



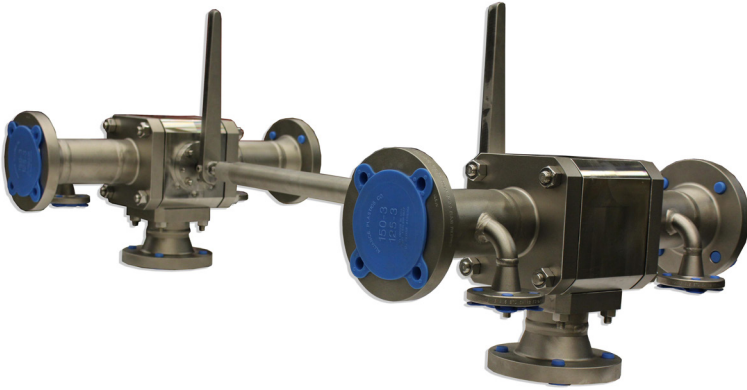
*Straight Through*



# ▶▶▶ VALVES

## Split Transfer Valve

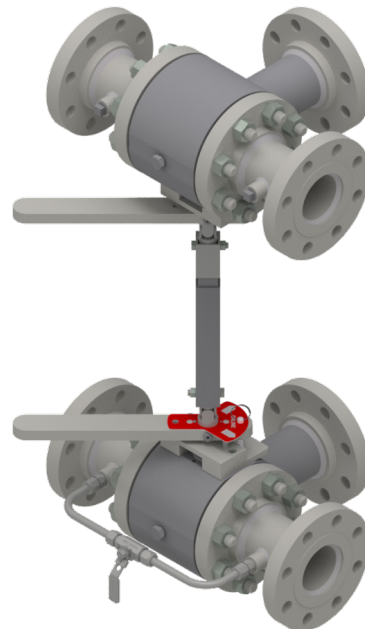
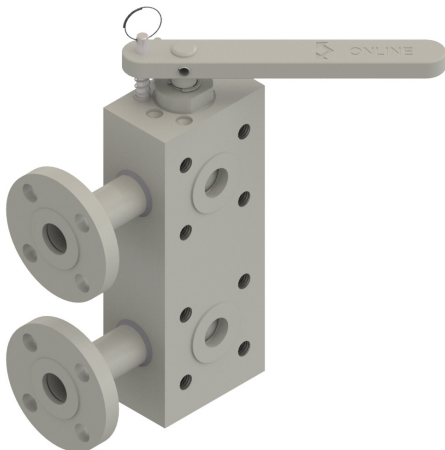
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## Ball Valves

### 3-Way and 6-Way Ball Valves

Like HILCO® Transfer Valves, HILCO® Ball valves provide uninterrupted flow during transfer of fluid. Unlike Transfer Valves, which are limited to liquid service, HILCO® Ball Valves are available for both liquids and gases. They can provide sealing for API-598 Class II for liquid service and ANSI FC170-2 Class VI for gas service. They are available in Carbon Steel and 316 SS with PEEK seats and Viton o-rings as standard.



# ▶▶▶ OIL RECLAMATION SYSTEMS

## Restore contaminated fluids to like-new condition.

Filters are ideal for removing small amounts of contaminants from a wide range of fluids, but there is another answer for larger quantities of water. With HILCO® oil reclaimers, there's no need to waste dirty industrial fluids because you can restore them effortlessly, efficiently and economically. HILCO® reclaimers pay for themselves by the amount of money they save you from spending on new fluids and disposal costs. Hilliard will test your fluid for free and recommend the reclaimer just right for your particular application.

## Remove Moisture and Particulate Contamination from Steam and Gas Turbine Lube Oils

### Application:

The primary application for oil conditioning is removal of moisture contamination from steam turbine lube oils which have good water separability characteristics (ASTM-D1401) and are commonly found in the power generation industry. Other applications may include refineries, chemical plants, heavy industry and steel mills.

### Benefits:

- Extends oil life
- Easy operation
- Protects system's
- Reduces maintenance
- Economically priced components from corrosion
- Increases bearing life



# ▶▶▶ OIL CONDITIONING SYSTEMS

## Custom Designs

HILCO's Engineers will analyze your requirements and design systems according to your needs. From the smallest Single-Cartridge Vessel to the most complex Coalescer system. Our lab can evaluate customer samples and recommend performance level and features required.

### Portable Models



### Single or Multiple-Element Vessels





# ▶▶▶ VACUUM DEHYDRATORS

**Restore Oil - Reduce Waste - Save Money**

Throwing away dirty oil is like throwing away money. Industrial oils lose their desired properties only because they get contaminated or wet. Dirty oil can be purified and re-used to save on oil costs. HILCO® Vacuum Dehydrators restore contaminated oils to like-new condition. **Simply. Efficiently. Economically.**

## The HILCO® Process.

### Heat and vacuum distillation

HILCO's vacuum process provides a highly efficient means for removal of moisture, solvents, dissolved gases and volatile impurities having a boiling point lower than oil.

The process starts when contaminated oil is drawn by vacuum through an easy-to-clean basket strainer, an adjustable flow control valve and an electric heater into a vaporizer. Since the contaminated oil is under vacuum during this process, the absolute pressure is lowered, resulting in a substantially lower boiling temperature for the contaminants. As the heated contaminated oil flows through the vaporizer, it is spread to a thin film, and the vacuum pump draws off the moisture and dissolved gases in the form of vapor. Purified oil is then pumped from the vaporizer to the outlet for re-use.

The vapor, drawn by the vacuum pump, passes through a water-cooled condenser, reverts back to a liquid and is collected in the distillate tank or exhausted into the atmosphere. Automatic-dumping distillate tanks are available on special order.

Simply put, this process of vacuum distillation produces oil that is virtually free of moisture and dissolved gases.

### Benefits:

- Compact
- Economical
- Quiet operation
- Simple to operate
- Easy maintenance
- Removes all free water
- Extends fluid life
- Protects system components from corrosion
- Decreases equipment downtime
- New oil cost savings provide quick payback on investment
- Heater capacity can be matched to water content and inlet oil temperature
- Adaptable to handle various flow rates and intermittent water slugs to 20% in incoming oil



**HILCO® Model O2R1800 Combination VD/OC**

## The HILCO® System.

With the addition of a settling tank, a clean-oil tank, filters and controls, the basic HILCO® Vacuum Dehydrator is converted into an extremely efficient reclamation system. The settling tank allows much of the free water and sludge to be drawn off before the oil enters the pre-filter. Oil then goes through the pre-filter and returns to the settling tank, completing the recirculation loop. When the Vacuum Dehydrator is activated, oil is drawn off this loop through a tee and into the Vacuum Dehydrator. Then the reclamation process takes place.

From the Vacuum Dehydrator, the oil can be pumped through a polishing filter, where any remaining minute particles of solid contaminants are removed. The oil is then pumped into a clean-oil holding tank.

Operator training for any HILCO® Vacuum Dehydrator or system is minimal. HILCO® systems are manufactured using quality materials and craftsmanship for durability and low maintenance.



# ▶▶▶ PORTABLE FILTERS

## Portable Filters and Filter Systems

HILCO® portable filters are an economical solution for removing water and particulate from oils, fuel and other fluids. Filters can be built to ASME Code standards.

HILCO® portable filters can be used for many different fluids, including: Mineral-based lubricating, hydraulic, and insulating oils, synthetic lubricating and hydraulic (EHC) fluids, fuel oils, kerosene, gasoline, ethylene glycol mixes, solvents, coolants and cutting oils, vacuum pump oils.

Every customer using lube and hydraulic oil needs a means to transfer, treat, and/or filter it. HILCO® filtration systems are available in many sizes and flow ranges with options to make them easy to use and handle. Available with air-powered pumps as well as motor driven gear pumps, they can be used with any standard HILCO® cartridges, including Hilsorb® dryer elements, which absorb water from oil while removing solids.



*HILCO® Single Cartridge*



*HILCO® HP4*

## HILCO's HP4 Off-line Filtration System

is competitively priced, features reasonably priced high efficiency elements, and has the heavy-duty construction you expect from HILCO®. The HILCO® HP4 offers a variety of elements to remove particulate and water. Cartridges are available in inexpensive cellulose or ultra-efficient synthetic medias. Cartridges constructed of HILCO's proprietary PD media to remove water and particulate to 3 micron are also available.



*HILCO® 2 High Cartridge*



# ▶▶▶ OIL MIST ELIMINATORS

The HILCO® mist eliminator removes visible oil vapor from the air stream of vents in lubricating oil systems of large, high-speed rotating equipment such as gas turbines, steam turbines, turbo compressors, turbo generators, reciprocating engines, high speed couplings and gear boxes. The mist eliminator prevents oil mist from contaminating air or soil, helping facilities comply with environmental regulations. It also makes for a cleaner, safer work environment by eliminating oily residue build-up on engine room floors, enclosures and stairwells, while improving indoor/outdoor air quality and reducing fire hazards.

The HILCO® mist eliminator also saves money by returning oil to the sump that would normally be lost during the venting process, greatly reducing make-up costs. There are currently three versions available: Blower Assisted, Mist Eliminator with Heat Exchanger, and a Coalescer-Only model. All models eliminate oil mist with an efficiency of 99.97% removal of all airborne contaminant regardless of particle size.



# ▶▶▶ OIL MIST ELIMINATORS

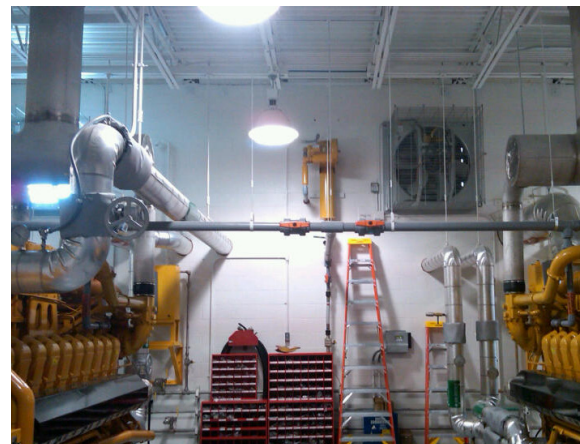
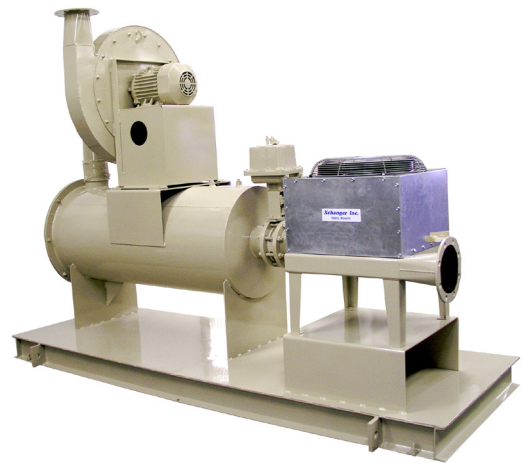
## **Blower-Assisted Mist Eliminator:**

This model is designed for oil systems that cannot withstand back pressure or where back pressure may not be desirable. It can be installed with an airflow-restriction device to pull vacuum. It is also designed to maintain atmospheric condition in the oil system.



## **Mist Eliminator with Heat Exchanger:**

This model is often used where the oil can reach excessively high temperatures (200° F and above). By cooling the air stream, the oil mist becomes easier to coalesce and therefore more efficient.



# ELIMINATE CRANKCASE EMISSIONS

## Non Blower-Assisted Oil Mist Eliminator:

This model is appropriate for use where back pressure on an oil system is not a concern. It can be sized large enough to meet pressure-drop requirements. It also can be used where an existing blower is present to assist flow.

Visible plume is defined as particles in the 0.3- to 0.5-micron-size range. The technically advanced, designed, and constructed HILCO® coalescing mist eliminator elements are 99.97% efficient down to 0.3 microns and have a MERV rating of 16.



## ADVANTAGES

- Ease of Use / Operation
- Simplicity
- Easy to Maintain
- OEM Specified
- Self Regulating — Do Not Require Constant Monitoring

## INDUSTRIAL MARKETS

- Electronics
- Automotive
- Food and Beverage
- Textile
- Paper and Pulp
- Iron and Steel

## BENEFITS

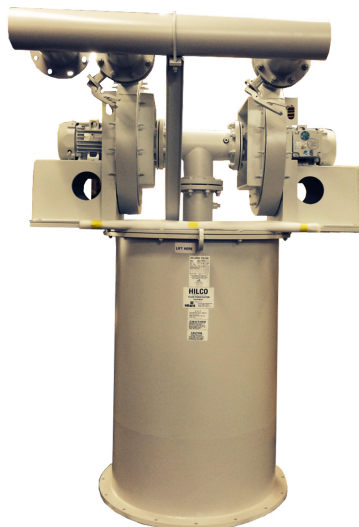
- Removes Visible Plume
- Ensures Environmental Compliance
- Reduces Oil Make-Up Cost
- Keeps Surfaces Oil-Free

## FEATURES

- Compact Design
- Easy to Install
- Quick Element Replacement
- High Efficiency
- Minimal Flow Resistance

## Mist Eliminator Applications

Gas & Steam Turbine Applications  
Rolls Royce / Allison  
Dresser-Rand  
GE Frame Engines  
GE Aeroderivatives  
Solar Turbines  
Pratt & Whitney  
Mitsubishi  
Siemens Westinghouse



## Reciprocating Engine & Compressor Applications

Caterpillar  
Dresser-Rand  
GE Frame Engines  
Cooper  
Ingersoll-Rand  
MAK  
Superior  
Waukesha  
White



# ▶▶▶ STAR® FILTER PRESSES



## Star® Filter Presses

Quality, dependable Stainless Steel Plate and Frame Filters for liquid processing applications and PolyPresses for low-cost, efficient dewatering of wastewater sludges and process slurries are available from Hilliard's Star® Filters Filtration Division.

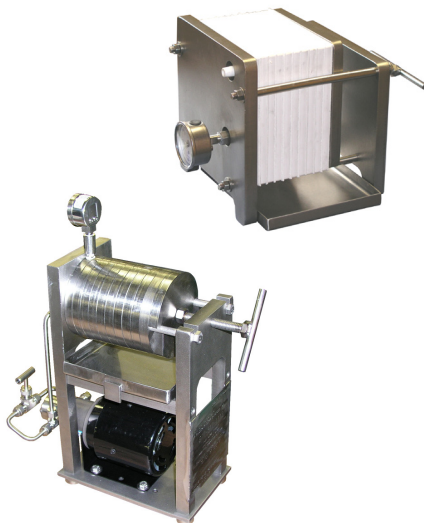
## Applications

Food & Beverage — Industrial  
Gross Solids Removal



## Plate & Frame

Star® Filter Press products are designed and built to provide years of service and are available with a range of options to meet your specifications. Star® plate and frame filter presses are manufactured in multiple standard sizes and materials to meet the requirements of your application. Additional features are available to accommodate every need. The Star® filter design offers a number of benefits such as: high sludge capacity, low maintenance, large filtration surface area, easy to operate and simple to clean. Star® Filter Press Can be used for a number of applications which include food & beverage, mining, metalworking, pharmaceuticals, cosmetics, biotech processing, chemical and petrochemical processing.



## Lab Scale Features

- Filtering area = 43.29 in.2
- Sludge capacity = 13.53 in.3
- 316 SS construction
- Open-design sludge frames
- Closed delivery — internal porting
- Precision-machined plates, frames, and heads
- Stainless steel drip pan
- Pressure gauge
- 20 GPH positive displacement pump with internal relief valve
- Close coupled 115 V — 1 phase TEFC motor
- Manual bypass loop arrangement

## Lab Scale Options

- Safety hood
- Electrics as required
- Longer stands for future expansion
- 304, 316, or 316L stainless stands and heads are sanitary and corrosion resistant
- Carbon steel stands available if desired

# ▶▶▶ STAR® FILTER PRESSES



## Oil Treatment System (OTS)

Hot oil treatment system greatly reduces oil replacement and disposal costs. The OTS filtration system improves the condition of the oil with each daily treatment, consistently giving you a superior quality end product. You may never throw away hot oil again. The efficiency of a filter press is combined with adsorbent powders to produce clear, high quality, reusable cooking oil and reduce free fatty acids (FFA) and polar compounds.

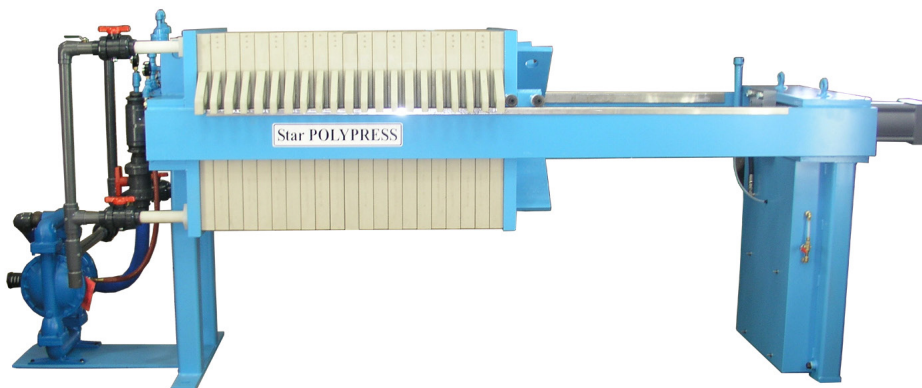


## Poly Press

Star® PolyPresses utilize high-quality polypropylene plates to resist corrosive chemicals. Standard air blowdown manifolds ensure drier, easier-to-release cakes. All hydraulic components are fully enclosed to protect them from harsh environments, yet are easy to access for maintenance.

## Applications

- Chemical & Petrochemical Processing
- Mining
- Pharmaceutical
- Waste Water

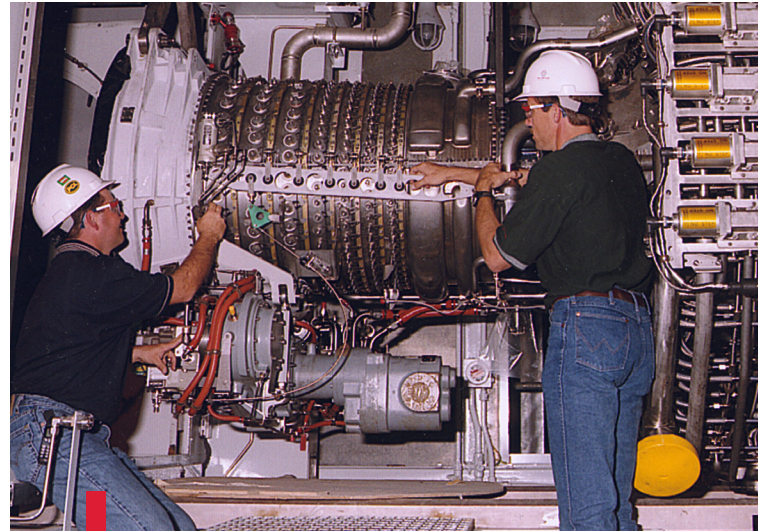




# ▶▶▶ ENGINE START PRODUCTS

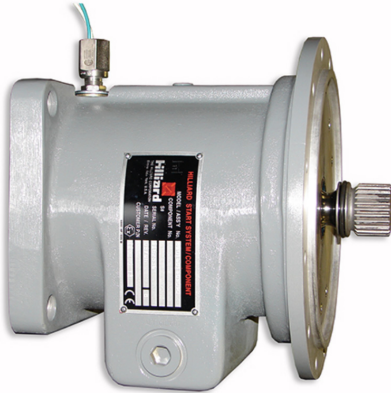
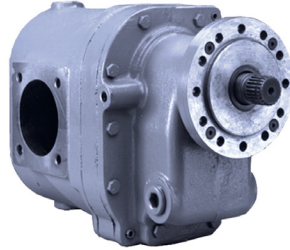
The Hilliard Corporation is a producer of Starter Clutch Drives, Electric Starter Assemblies, Hydraulic Starter Assemblies and Pneumatic Starters for use in aero derivative industrial turbine and reciprocating engine applications.

Hilliard starter designs and equipment are operating worldwide in pipeline, power generation and marine propulsion markets. Major starter-fleet experience has been achieved on engines and auxiliary gear boxes for Solar, General Electric, MAN Diesel & Turbo, Howden Turbo, Rolls Royce, Pratt & Whitney, and Siemens. New application designs can be engineered through the combination of available motor-starter structures and overrunning clutch modules.



## FITTED TO STARTER TYPES:

- Pneumatic
- Hydraulic
- Electric

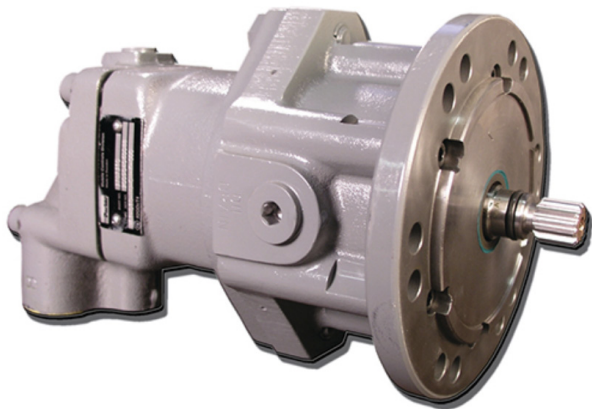


### Starter Overrunning Clutch Drive

The Hilliard High-Speed Starter Overrunning Clutch Drive provides positive engagement and high torque on demand. Featuring a unique roller-ramp design, the clutch when engaged transmits power via the precision-machined cam and roller assembly connected to the input shaft. A ball bearing at each end of the roll cage supports and aligns the cam in relation to the drive (output) shaft.

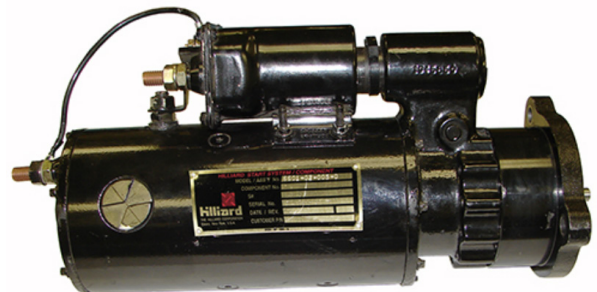
### Hydraulic Starter Motor and Clutch Assembly

Variable and fixed displacement types. SAE mounting, spline shafts. Typical operating pressures up to 5000 psig (350 bar). High-speed operation. High starting torque efficiency. Different sizes for different applications. Suitable for open and closed loop circuits. Supply includes overrunning clutch.



### Electric Start Assembly

24 volt DC power. Solenoid actuated Positork drive. Output torque up to 80 ft lb. Splined output for gas turbine applications. SAE 3 mounting flange, multi-position. CW and CCW direction of rotation.





# ▶▶▶ HILCO® LAB SERVICES

**Our world-class laboratory services** expand beyond common industry-standard tests. We dive deeper and deliver more than just data. We accurately gather and analyze data; consistently recognize and understand target problems; and successfully design custom solutions that ensure the safety, quality, and reliability that you expect from an industry leading collaborator.

The Hilliard Corporation's HILCO® Laboratory Services executes superior testing that supports industrial filtration and fluid analysis, delivering custom and optimal solutions that extend the life of the equipment used in industrial processes.

## Here's What It Means For You

We are the proving ground for the system you invest in and trust to protect your vital processes from wear and downtime due to contamination and incomplete filtration. We are dedicated to going above and beyond to ensure you remain at your best. Catering to a multitude of industry applications, we have the expertise to keep you at the top of the industry.

- Chemical and Petrochemical Processing
- Industrial Gross Solids Removal
- Material Handling
- Mid-Stream Gas
- Oil and Gas
- Power Generation
- Refinery
- Wastewater

Anywhere from testing to development, we are your complete solutions provider.



## Our laboratory houses uncommon testing systems such as:

- high flow rate systems
- low pressure tests
- collapse integrity tests
- water test stands
- multi-pass testing stands
- static discharge testing stands





# ▶▶▶ HILCO® LAB SERVICES

Hilliard Corporation's HILCO® division has over 90 years of experience designing filtration products that extend the life of the equipment used in industrial processes. Whether your need is fluid filtration and conditioning or fluid recovery, reclamation and restoration for re-use, HILCO® filters and filtration systems are used in applications across a wide range of industries.

The efficacy of our filtration research and development is supported by our commercially available HILCO® Laboratory Services. HILCO® Lab Services provide a full suite of rigorous world-class test capabilities to support industrial filtration and fluids analysis.

Our Laboratory Services are used in product development, evaluating potential customer problems or needs, and competitor performance.

## **Fluid Sample Analysis:**

The Hilliard Corporation's HILCO® Laboratory Services Developmental Engineering Fluid Analysis utilizes a wide range of tests to evaluate a fluid's condition; the quantity and types of contaminants in the fluid; and the physical properties of the fluid.

Contaminants in process fluids can lead to extreme wear on a system causing lower productivity and reliability, which can negatively impact revenue. Our in-depth process of analyzing fluid gives us the information needed to deliver "like-new" fluid restoration.

We can extend fluid use, increase system life, and maximize productivity, saving you time and money, and keeping you as an industry leader.

## **Filtration Media and Material Testing:**

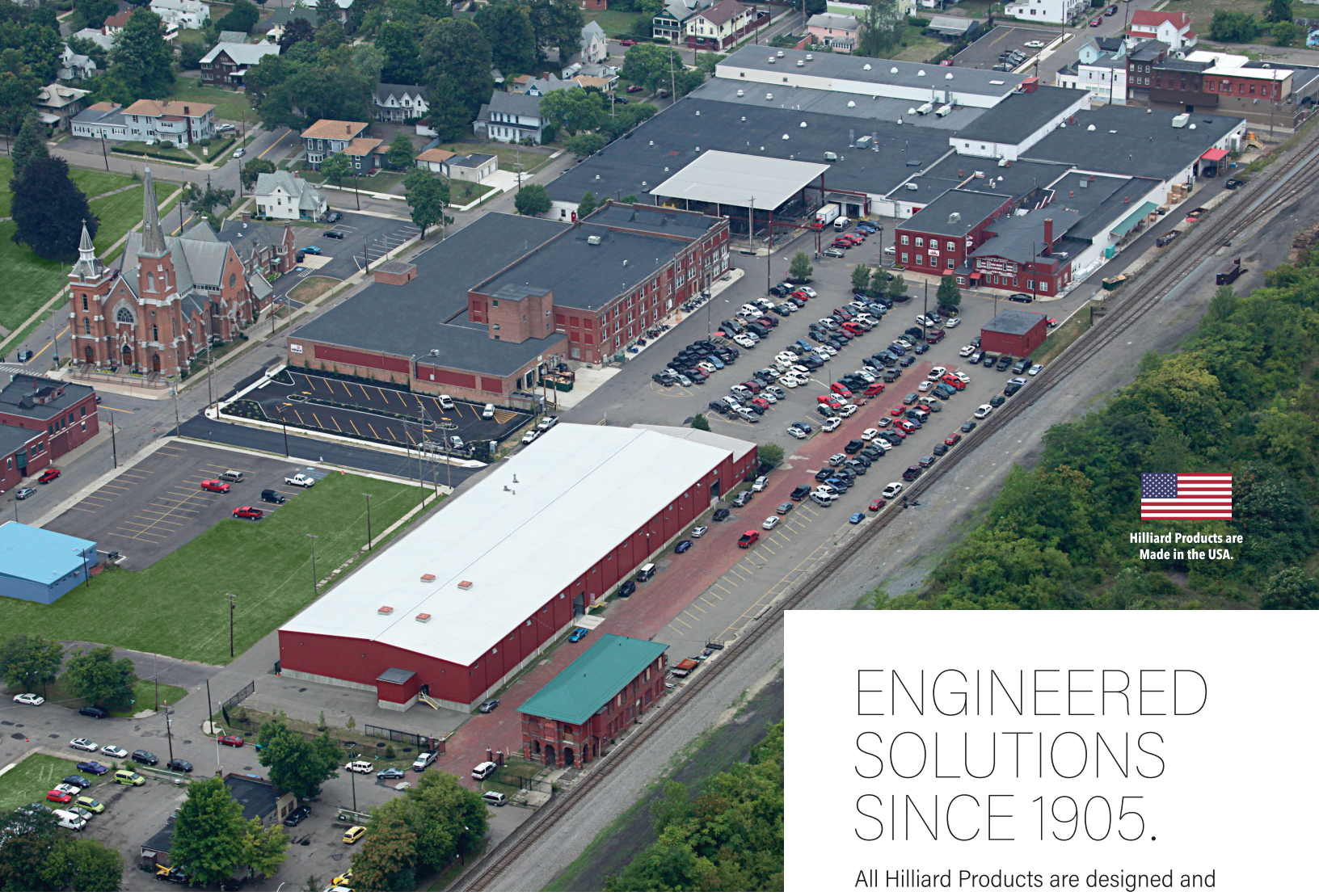
We take pride in our standard of excellence, and we uphold these standards by using an assortment of tests to provide valuable information and solutions to ensure the highest quality in filter media and cartridges.

The Hilliard Corporation's HILCO® Laboratory Services can identify critical physical properties of the filter media used in production cartridges, as well as the evaluation of potential new media to provide filter manufacturers with the information needed to save them time and money while delivering supreme quality.

**RENTAL OPTIONS AVAILABLE**  
FOR SOME EQUIPMENT







Hilliard Products are Made in the USA.

# ENGINEERED SOLUTIONS SINCE 1905.

All Hilliard Products are designed and manufactured in Elmira, New York.



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*What the* **HILLIARD** **HILCO** ® **LINE**  
IS DOING FOR OTHERS AND WILL DO FOR YOU!

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• AIRLINE OIL PURIFIERS

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**The Hilliard Corporation**  
100 West Fourth Street  
Elmira, New York 14902-1504 USA  
ph: 607-733-7121 | email: [hilliard@hilliardcorp.com](mailto:hilliard@hilliardcorp.com)



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