

For over 65 years, Graver has supplied custom and semi-custom water treatment solutions for Power Generation and Petrochemical plants, Pulp & Paper mills, as well as many other Industries. The products below are a sample of our portfolio.

Condensate Treatment

Filtration and Polishing

Powdex® Filter / Demineralizer

Graver's Powdex is a precoat filter demineralizer providing both suspended solids removal and ion exchange capability in a single vessel. The process utilizes fine particle size ion exchange resin with fiber materials to form a precoat on specially designed filter septa.



Deep Bed Condensate Polisher

Graver's Deep Bed Condensate Polishers provide the best method for the removal of high ionic loads due to their large ion exchange capacity. These polishers are optimized using proprietary flow distribution and enhanced resin utilization. For on-site regeneration, the proprietary two-vessel SepraEight® system has a compact footprint without compromising separation efficiency.



TurboGuard® and AFA® Condensate Filters

Graver's TurboGuard & AFA High Flow Filters are designed specifically for condensate or other critical utility application where dirt holding capacity and CRUD removal properties are essential. High flow in a compact footprint, inside to outside flow, preventing potential contamination during element replacement.



Clarification

Chemical mixing, Flocculation and Thickening

Reactivator® Solids Contact Clarifier

Graver's Reactivator is a high rate continuous clarifier used for economical water clarification and/or softening by precipitation and coagulation. This unit combines flash mixing, flocculation, clarification and sludge thickening into one operation to remove suspended solids, color, organic matter, iron, manganese, hardness and alkalinity.



Lamella Inclined Plate Separator

Graver Lamella clarifiers use inclined plates to increase the settling surface thus reducing the space needed to achieve solid/liquid separation. These compact systems produce high quality effluent and can incorporate sludge thickening. Available in FRP, steel or concrete construction. An optional thickener can be added for increased solids concentration in the same footprint.



Filtration (Gravity Type)

Particulate Removal

MonoScour® Fully Automatic Gravity Filter

The MonoScour filter is a heavy duty, high rate fully automatic gravity filter with a self contained backwash compartment and vigorous air scour step ensuring maximum filter media cleaning during backwash. Designed for treating high suspended solids and sticky particulates that are typically present following chemical treatment using polymers and coagulants.



Filter-Pak® and Scour-Pak® Gravity Filters

These gravity depth filters are heavy-duty self cleaning units are fully automatic and include an air-scour step to ensure thorough cleaning of the filter media. The Scour-Pak is available in a square or rectangular filter configuration, The Filter-Pak is similar to the Scour-Pak but is expandable in number and filter cell arrangement. Both units can be constructed of steel or concrete.



Filtration (Pressure)

Particulate Removal

Horizontal and Vertical Pressure Filters

Graver offers a full line of automatic pressure filters in both vertical and horizontal type, single or multi-cell systems. Media choices include sand, anthracite, garnet, activated carbon and greensand. Optional features include air scour and rotary surface washers.



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**Filtration
(Pressure)**

Particulate

GravFlex Multimedia, Carbon, Greensand Filters

Graver's semi-custom line of filters protect downstream equipment such as RO, Ion Exchange and EDI from particulates, organics and chlorination. Available in both FRP and Carbon steel construction, GravFlex filters can be modified to meet your specification.



Softening

Hardness
Reduction

Hot Process Softeners

The Graver Hot Process Softener is an integrated system combining chemical treatment of boiler feedwater makeup at elevated temperatures, clarification of chemically treated water and deaeration/storage of makeup and condensate. The softener reduces hardness, alkalinity, silica, oxygen and suspended solids for many industrial applications.



GravFlex Softeners

Graver's semi-custom line of filters protect downstream equipment such as RO, Ion Exchange and EDI from hardness and scaling. Available in both FRP and carbon steel construction, GravFlex softeners can be modified to meet your specification.



**Reverse
Osmosis**

Ion Reduction

ROFlex and Oceana Reverse Osmosis

Graver's ROFlex (brackish) and Oceana (seawater) RO systems demineralize water without the use of regenerant chemicals needed in Ion Exchange units. Optional features such as VFD drives decrease energy consumption and on-board chem feed and Clean-In-Place (CIP) greatly increase ease of use.



**Electro-
deionization**

UPW Polishing

ElectroFlex EDI Systems

Graver's ElectroFlex systems demineralize water without the use of regenerant chemicals needed in traditional cation, anion/mixed bed Ion Exchange units, using only electricity to generate deionized water. EDI is considered the standard in many industries with extremely low OPEX and no waste generation.

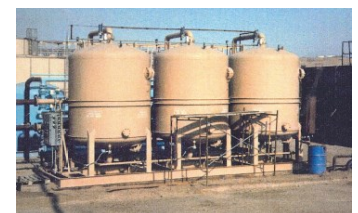


Oil Coalescer

Oil/Water
Separation

Elf® Coalescer and Trisep® Process

The Elf Coalescer is a simple, virtually maintenance free system for separating oil from steam condensate by utilizing a bed of oleophilic ion exchange resins to agglomerate loose oil. Widely used in refineries, petrochemical plants and related industries where treatment of produced water and other oily wastewaters is needed.



**Walnut Shell
Filter**

Oil/Water
Separation

Hydroflow® Walnut Shell Filters

Hydroflow is the 8th generation Walnut Shell media filter with greatly improved performance over original nut shell filter first introduced in the 80's. Simple automatic design, Low backwash fluid volumes, No need for chemicals, No gas or air scour required, No clean water required to backwash, Very low attrition rate, Uninterrupted upstream flow. Recommended design limits: ≤100 ppm inlet of combined TSS/O&G, Removes >98% of oil contaminants/suspended solids.



**Induced Gas
Flotation**

Oil/Water
Separation

IGF Stage System

The IGF system uses a gas eductor and coalescing pack to enhance the design used on standard API tanks for separating heavy and light particles from a liquid stream. With low operating and maintenance cost, it is easy to convert existing tanks and eliminate down time for clean out of solids. Lowers construction cost by decreasing tank size requirement.



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**Automatic
Backwash
Filter**

Oil Removal

FlowGuard™ Automatic Backwashable Filter

Designed with built in clean water reservoir for backwashing, the FlowGuard delivers sufficient energy & volume to effectively clean the filter elements to near original specifications. This backwashing process is repeated through many long dependable cycles. An alternative to replaceable cartridges, FlowGuard equates to significant operating cost savings.



**Packed Bed
IX**

Ion Exchange

Packed Bed Systems

Packed Bed Ion Exchange technology has been widely used in Europe than North America, but with more and more installations, the trend in North America is growing and Ecodyne is leading the way. Packed bed technology has a slightly higher capital cost; however, it provides long lasting benefits that are likely to meet your pay back criteria.



**Conventional
IX**

Ion Exchange

Conventional Ion Exchange Systems

Whether it's softeners, dealkalizers, cocurrent or countercurrent demineralizers, we have a custom designed ion-exchange solution to suit your application. Ion Exchange systems have long been the workhorse system, should your application or process require deionized water, IX will provide steady production and quality with this proven technology.

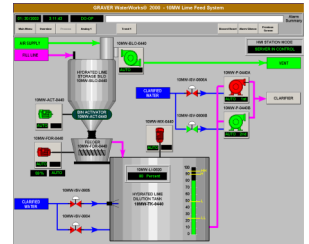


**Controls
Upgrades**

Renew

WaterWorks® Control Upgrades for reliability

Control system upgrades are the single largest opportunity to improve plant reliability. Our upgrade replaces obsolete controls with new PLC hardware plus proprietary algorithms to optimize your system's performance. Our professional team of engineers create a custom upgraded system, and use our design facility to perform functional checkout and FAT. Examples: Push button to Microprocessor, adding HMI screens and system expansions.



**Mechanical
Retrofits**

Refurbish

Mechanical Retrofits extend existing system life

Graver's mechanical retrofits extend the service life of old systems with new components through refurbishment. Timely replacements reduce operating costs thus saving future capital costs.

Example retrofits: drives upgrades, impeller replacement, floc barrier addition, rakes, valves, replacement piping, vessel lining.

Additional services include Job Supervision and Field Inspection



**Aftermarket
Parts and
Service**

Replace

Original Equipment & Competitor Replacement Parts

Graver stocks hundreds of parts for both Graver systems as well as those of our competitors. Using our comprehensive database, we search for your original part and supply an exact replacement.

Deaerators: Trays and Cubes, Spray valves

Media Filters: Graver's patented air/water scour strainer

Clarifier Parts: Drive gears, bearings, shafts, sprockets and liners

Cooling Tower Parts: Fan Drives and couplings for all makes/models

