

## Industrial Wastewater Treatment Technologies

### *Oil Water Separators/Dissolved Air Flotation/Slant Plate Clarifiers*

#### **API 5-1800 GPM**



The API is the oldest of the modern gravity separator designs. This is what everyone thinks of when looking for a separator. Built to API 421 criteria its performance is <100mg/L, 150-micron free non-emulsified oil droplets. This design provides the solution for heavy solids and oil removal applications.

Equally comfortable in refineries, the oil patch in frac projects as well as heavy industrial installations we offer lots of options, materials of construction and configurations to tailor this model to your needs.

#### **OS 5-5000 GPM**

This is the workhorse of our fleet from Asphalt plants to Xylene impacted groundwater this model is called on again and again to solve the problem. With <10mg/L, 30-micron free, dispersed and non-emulsified oil droplet performance it will deliver results in a robust brassy coated A36 carbon or stainless steel construction designed around API 421 criteria for coalescing separators. Standard features such as sludge hopper bottom(s) oil skimmer & reservoir, adjustable water weir 33 model sizes, 30+ options and endless customization possibilities.



#### **OSe 5-100 GPM**



The OSe series design provides a standard 304 SS tank construction while providing the standard OS family performance: <10mg/L, 30-micron free, dispersed and non-emulsified oil droplets. As with all of our separator models many configurations, customization and options are available. This design was created and engineered to cut cost, provide excellent performance and corrosion resistance in most applications and it does just that!

#### **OSF 5-50 GPM**

This is the product that launched our company and remains a very popular product after 25 years in production. Performance: <10mg/L, 30-micron free, dispersed and non-emulsified oil droplets. Premium fiberglass construction for long life And corrosion resistance inside and out. As a standard feature it provides the ability to store oil, pump out treated water direct from the expandable effluent chamber or do both, no need for an external tank for pump supply.

This is a flexible design and its light weight FRP construction makes it a natural for mobile applications on a truck bed, shipping container or trailer. Lots of options make this a highly configurable design.



#### **FB 5-5000 GPM**



Designed for low/no solids applications and we made it more compact to fit into tight spaces in power generation plants or anywhere head space and Ft2 are at a premium. Same performance as the OS family, same options to choose from.

**TPI 5-2000 GPM**

The TPI Series Tilted Plate Interceptors (also known as a CPI) are designed per API-421 1st Edition, February 1990, Section 4 Parallel Plate Separators. This design is based on a 60 micron oil droplet size with an expected performance of 50 mg/L or Less non-emulsified free oil droplet. TPI tank and plate packs can be used in high solids applications designed for a 45° - 60° angle range and a plate spacing of ½" - 2". We provide our Wave Plate™ TPI pack which allows more surface area per plate pack footprint than our flat plate pack.

TPI media packs are offered with and without 304 SS media frame for concrete tank construction.



**COS 5-250,000 GPM**



The COS Series, Concrete Coalescing Oil Water Separators are designed for applications where a high performance coalescing separator design is desired using Flopak coalescing media. The industrial duty COS design offers many features such as solids V-hopper, sludge auger, adjustable water weir, integral inlet diffuser, and many options to provide engineers, system integrators and end users with convenience and flexibility in oil separator system configuration choices.

The COS design can be sized for any flow rate desired in single or multi-channel designs to accommodate facility shutdown/maintenance without stopping the flow. A wide variety of configurations and features can be provided.

**EC 5-200 GPM**

These systems are for emulsion breaking of a variety of waste types in industrial wastestream.

EC Series emulsion breaking systems are designed to remove free/dispersed and emulsified hydrocarbon products in wastewater streams through the use of chemical cracking technology.

The emulsion is cracked via pH adjustment and/or emulsion cracking chemistry. Oil water separation follows the cracking stage. Many sizes, chemical processes and custom designs are offered up to 200 GPM.

The compact EC Series emulsion cracking systems are designed for above grade applications with many features and options to provide engineers, system integrators and end users with convenience and flexibility in system integration choices. Customization & modifications are available to fit your project needs are offered.

Typical performance is 10 ppm or less, 30 micron oil droplet

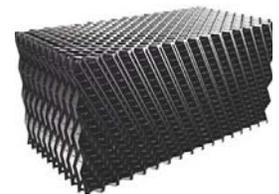


**MP Oil Water Separator Media Packs for All Flow Rates**



Build a new ows, retrofit an existing sump, pit, vault or tank and turn it into a high performance separator We'll help you!

Flopak is a standard feature of our high performance oil water separators and is also offered for replacement or retrofitting of existing tanks to improve performance and increase flow rates. Removal efficiencies have been as low as <1 mg/L down to non-detect. Typical, regular performance is in the 3-10 mg/L range depending on wastestream characteristics.



Flopak PVC Media

Pan America Environmental can provide review of your existing tank to replace existing media or engineer the fitting of Flopak into a tank for the first time via modifications to optimize tank design for the best oil separation environment.

**DAF**

Dissolved Air Flotation

We offer a variety of DAF designs from our Dinky DAF to our plate DAF and large DAF designs we Can provide a system design to achieve your project goals. Chemical pretreatment is typically Recommended to optimize DAF performance. Sizes: 5-600 Ft2



Dissolved Air Flotation systems are an extremely versatile design allowing high loads of a very wide variety of contaminants to be removed from your wastestream. DAF is considered to be the best, most cost-effective device for separating FOG and solids.



**SPC**

Slant Plate Clarifier

Our Slant Plate Lamella Clarifier product line offers a variety of models in a variety of models in a variety of materials such as coated carbon steel, stainless steel, polypropylene and polyethylene.

The SPCs can be matched with the CRT systems Provide a complete solution with integrated or Separate system skids.



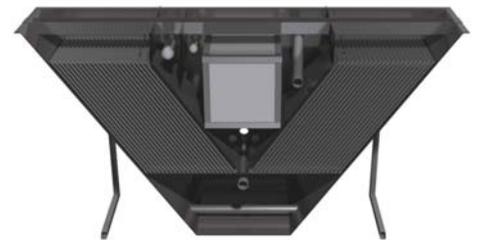
**Extreme V**

Clarifier/Oil Water Separator



The Extreme V is a unique combination of Slant Plate Clarifier and oil water separator and is applied to projects where oils and solids are present. The design allows a wide variety of optional configurations.

Combining with chemical pretreatment completes the treatment system.



**CRT**

Chemical Reaction Treatment

The CRT Series Chemical Reaction Treatment systems are designed to implement a wide variety of flexible chemical treatment sequences by continuous, sequential addition & reaction when treating a continuous wastestream.

Chemistries: pH neutralization, coagulation, flocculation reduction, precipitation and decomposition.



**STAX**

Inline pipe flocculation systems



The STAX systems are a pipe flocculator design that provides multiple-chemical reaction contact in a compact, small footprint design without moving parts, wearing components and no need for power. The STAX design uses water turbulence induced by a spiral piping network to mix chemical products into a wastestream.

The design eliminates the need for mixing tanks, mixers and electrical consumption. The process takes place under highly controlled, well-defined and optimized conditions. This design reduces cost and is simple to implement.

**EpH**

pH Neutralization

The EpH systems monitor and maintain a pH set point on a continuous basis from a wash water waste stream and a wide variety of industrial waste streams. The typical wastewater pH range for treatment is from 4-11. Effluent from the pH system is usually in the 6-9 pH range per most local POTW discharge limits.

Systems are configurable to meet the standard continuous neutralization mode or optional manual and semi-automatic batch modes.



**BTS 50 -5000 Gallon**

Batch Treatment System



BTS Series **B**atch **T**reatment **S**ystems are designed to implement a wide variety of flexible chemical treatment scenarios by batch treating a fixed water volume. Chemistry is dependent on the wastewater makeup and may need jar testing to verify proper chemical recipe(s) The BTS systems can also be provided as a manually operated system where volumes are slow to accumulate or project capital cost reduction is important.

The system design provides a small footprint, low energy consumption, simple operation, adjustment and maintenance. Customization, modifications & options are available to tailor the system to your project.



**BOWTS**

Bilge Oily Water Treatment System

The BOWTS Series **B**ilge and **O**ily **W**astewater **T**reatment **S**ystems are designed to implement a wide variety of flexible chemical/physical treatment scenarios to fit shipping and naval treatment requirements for shore-side treatment installations. In the reduction of emulsions, solids, metals, oils and fuels chemistry is important and dependent on the wastewater makeup and requires jar testing to verify proper chemical recipe(s). Typical chemicals used: ferric, alum, polyacrylamide flocculants, NaOH, H2SO4, calcium hydroxide.

The BOWTS systems by design encompass a system family with a wide variety of equipment configurations and combinations dependent primarily on project needs.



**BF**

**Bag Filtration**



Bag filtration has become a standard technology for water treatment and we provide it as required in many projects. The filters can be provided in multiples, Singles in parallel or sequential or duty/standby orientation with isolation and with switching automation and/or pressure monitoring.

The vessel sizes are determined for each project and construction materials Such as coated carbon steel, stainless steel, PVC, polypropylene can be Provided as needed to fit the wastestream.



**Mobile Systems**

PAE can mobilize your treatment system via the use of trailers, shipping containers, oil field skid or custom skidding.



## Wash Water Treatment Systems

Pan America has a specialized product line developed for washwater and it consists of a modular product group to allow the enduser to select specific pieces or all required for their project. Please request our catalog for this product line or go to [www.wash-water-treatment.com](http://www.wash-water-treatment.com) and download it now.

**VEW**

The VEW-A treatment systems are the centerpiece of the VEW line and are an integral part of the automated, full recycle system design and consists of the following sub-systems:

- Oil Water Separator
- Solids filtration
- Effluent pumpout system
- AQAM polishing filter
- Master Control Panel (MCP) automatic controls

The VEW-A model can be used as a stand-alone treat and discharge to sewer design or when combined with the balance of the other VEW modules it becomes a full recycle/reuse system. The other modules needed for full recycle are:

- IFS Influent Feed System
- PSM Pressurized Supply Module
- EnBio treatment system
- Sludge Handling Filter
- Washpad & collection TB series (Triple Basin) collection sump



## Extreme V



Extreme V core technologies consists of our Slant Pack solids settling and Flopak oil coalescing technologies, solids filtration and AQAM filtration. All are the same high performance designs we use in our industrial treatment systems and the equipment designs are built to exceed the capabilities of today's typical wash water treatment and recycle system designs.

Settling efficiency is not based on retention time or water volume but is based on Slant Pack surface area. Settling efficiency is directly related to settling velocity and settling distance where our Slant Pack shortens settling distances negating the need for large bulky tanks. The shortened distance speeds up settling. High performance clarification and oil separation is based on a large settling surface area and large oil coalescing surface area where the surface areas increase the speed and performance of the separation processes in a smaller volumetric space.

## PSM

The PSM Pressurization Supply Module systems are provided to store treated water and supply it back to the pressure washer(s) under pressure on demand and supply to the Mud Blaster supply pump. The PSM systems are offered in a range of flow rates from 5 to 50 GPM with larger systems available. The PSM consist of the following components:

- Clean water storage tank
- Pressurization pump, stainless steel construction
- Hydro-pneumatic tank to maintain line pressure
- Pressure switch to maintain automatic pressure control
- Clean water tank low level sensor to protect pump against lose of water supply
- Automatic controls

The PSM can be used as a stand-alone collection and supply system or retro-fit to an existing system. The storage tank can be provided per the standard volumes or we can provide larger volumes to fit your facility needs.



## IFS

Influent Feed System



The IFS Influent Feed Systems are provided to transfer wash water from the collection sump to the treatment system inlet.

The IFS pump skid is installed near the collection sump and plumbed into the sump. The level switches are mounted in the sump to detect the high and low water level and activate and deactivate the pump based on these levels.

Controls in the Master Control Panel (MCP) located on the VEW skid provides both manual and automatic on/off control. The MCP also provides automatic shutdown based on a high water level condition in the oil water separator effluent chamber to stop water from entering the separator.

## SuperAerator XL

Bacterial injection & Aeration

For odor and contaminant reduction with bio-treatment aeration and bacteria addition is required in order to maintain sufficient oxygen content for the EnBio™ bacteria treatment program. The SuperAerator™ and SuperAerator™ XL systems when used in combination with the EnBio™ system will reduce pit management problems such as odor and sludge reduction.

The system consists of:

- Air pump
- Air diffuser(s)
- Air tubing
- EnBio metering/injection pump

The XL system combines the EnBio™ system with the SuperAerator™ in one convenient enclosure



## Triple Basin

Collection Basin



The TB series Triple Basin collection sump systems are provided to collect wash water from the washpad and allow a location for solids to settle out, aeration and EnBio™ biological treatment to occur. The Triple Basin is an integral part of the treatment system as it is pre-treatment to the VEW system. The Triple Basin consists of the following features:

- (3) FRP chambers, vertical cylindrical design
- Internal baffling to control flow path
- Interconnecting piping
- Covers with inspection panels
- NPT inlet/outlet and vent fittings
- Final water pumpout chamber

The basins can be used as a stand-alone collection/treatment system, provided with the VEWs or retro-fit to an existing system and can reduce the cost of sump pit design and installation when compared to concrete.

## MudBlaster

Demucking Systems

Mud Blaster™ systems provide a high water volume under moderate pressure for removal of high loadings of mud and dirt from heavy equipment prior to finish washing.

High water volumes at lower pressures are more effective at removing heavy dirt loads than low flow high pressure systems.



## Filter Pac



The Filter Pac systems provide customizable effluent filtration that can be applied to any of the VEW family of systems or your existing treatment system wherever additional filtration is required to boost filtration capability and treatment performance.

*Filter Pac Systems provides*

- Effluent pumping
- Effluent solids filtration
- AQAM filtration
- GAC (carbon) filtration
- Local or integrated controls
- Other specialty filtration medias/resins
- Customization to wastestream contaminants

## MicroStax

Pipe flocculator systems

The Pan America Environmental MicroSTAX™ systems typically used prior to the EXtreme V™

and EXtreme Float™ systems are a pipe flocculator type of design that provides multiple-chemical reaction contact in a compact footprint design without moving parts, wearing components or need for power. The MicroSTAX™ design uses water turbulence induced by a serpentine piping network to mix chemical products into a wastestream.

The design eliminates the need for mixing tanks, mixers and electrical consumption. The process takes place under highly controlled, well-defined and optimized conditions.



### Washbay Layout



Washbay, washpad and collection sump system design is an entire subject matter in and of itself and we are unable to cover all aspects in this catalog.

The washpad is an important part of your wash & treatment facility as solids will usually be a large part of the treatment process. The more solids you can reduce at the washpad/sump the less you have to remove at the treatment system and this will also reduce system maintenance and downtime.

The washpad, collection troughs and collection sumps are an integral part of the treatment system and should be considered as the initial water treatment effort and will provide pretreatment functions.

### Containerization

Our wash water treatment systems can be containerized to create a complete treatment system ready to install with its own protective enclosure.

Containerization allows rapid mobilization and independent implementation in remote locations. Our container designs offer customized layouts and container configurations to match application needs and enduser desires.

