The VEW treatment system is a family of modular systems that can be mixed and matched to tailor the system design to your facility needs and create a complete solution for your wash facility.

Customization & modifications to fit your project needs are possible through the many options we offer.

The VEW systems are designed for treatment of wash water generated by vehicle and equipment wash facilities. These systems can be used where wash water is generated from washing cars, trucks, tank wash, trains, aircraft, watercraft, military equipment, heavy equipment, forklifts and other washracks.

Recycling with the VEW systems consists of using physical separation processes with biological treatment for proper treatment. Without the biological treatment component you would need a lot of other equipment to complete the recycle system, which would greatly increase system and operational costs. The bacteria injection system allows recycling at a greatly reduced cost and is well matched to your project.

**Biological Treatment, Odors and Biological Growth**

Treatment and storage systems containing waste water and treated water can encourage growth of bacteria which can lead to odor, bio-growth and ultimately septic conditions. With the addition of our EnBio™ bacterial treatment system bacteria not only consume petroleum products but also reduce or eliminate the odors created by them and other contaminants in the system.
VEW-A: Automated Wash Water Recycling Systems

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 sump

VEW: Automated Wash Water Treat and Discharge or Recycling Systems

The VEW treatment systems are the economical recycle or treat and discharge system design as dictated by the application and consists of the following sub-systems:
- Oil Water Separator
- Solids filtration
- Effluent pumpout system
- Master Control Panel (MCP) automatic controls

The VEW 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 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

The VEW systems are provided for flow rates 5-50 GPM in FRP construction and 50-300 GPM in steel construction.

### VEW-A Equipment Detail

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow Rate GPM</th>
<th>Operating Weight</th>
<th>AQAM Media</th>
<th>Voltage V/pH/Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEW-2-A</td>
<td>5</td>
<td>805</td>
<td>180 lbs</td>
<td>115/1/60</td>
</tr>
<tr>
<td>VEW-4-A</td>
<td>10</td>
<td>2000</td>
<td>350 lbs</td>
<td>115/1/60</td>
</tr>
<tr>
<td>VEW-8-A</td>
<td>25</td>
<td>4020</td>
<td>900 lbs</td>
<td>115/1/60</td>
</tr>
<tr>
<td>VEW-12-A</td>
<td>35</td>
<td>4800</td>
<td>1500 lbs</td>
<td>230/3/60</td>
</tr>
<tr>
<td>VEW-16-A</td>
<td>50</td>
<td>6200</td>
<td>1850 lbs</td>
<td>230/3/60</td>
</tr>
</tbody>
</table>

Larger flow rates up to 300 GPM available.

### VEW Options

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF-2</td>
<td>Sludge filter, dual</td>
</tr>
<tr>
<td>ASV</td>
<td>Automatic sludge valve</td>
</tr>
</tbody>
</table>

### VEW Equipment Detail

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow Rate GPM</th>
<th>Operating Weight</th>
<th>Voltage V/pH/Hz</th>
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</thead>
<tbody>
<tr>
<td>VEW-2</td>
<td>5</td>
<td>805</td>
<td>115/1/60</td>
</tr>
<tr>
<td>VEW-4</td>
<td>10</td>
<td>2000</td>
<td>115/1/60</td>
</tr>
<tr>
<td>VEW-8</td>
<td>25</td>
<td>4020</td>
<td>115/1/60</td>
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<tr>
<td>VEW-12</td>
<td>35</td>
<td>4800</td>
<td>230/3/60</td>
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<tr>
<td>VEW-16</td>
<td>50</td>
<td>6200</td>
<td>230/3/60</td>
</tr>
</tbody>
</table>

Larger flow rates up to 300 GPM available.
Extreme V™

Industrial Grade Heavy Duty Treatment Systems

Flow Rates: 2-300 GPM

Extreme V core technologies consists of our Slant Plate 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 where nothing but heavy duty will suffice 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, water volume or water depth 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.

Use for wash racks with:
- High mud, solids, grit
- Highly variable waste characteristics
- Flow rates 2-300 GPM
- Heavy metals
- Heavy oils, fuels, petroleum, crude, HFO
- DNAPL, LNAPL, BTEX, VOC products

The Extreme V™ System Consists of:
- ExV settling separation tank
- Effluent collection tank
- Effluent pumpout
- Primary solids filter 15 micron
- Final solids filter 5 micron
- AQAM filter

Use MicroSTAX™ optional chemical treatment systems with the ExV where difficult to settle solids are a problem to increased performance

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow GPM</th>
<th>Dimensions L X W X H</th>
<th>Settling Area Ft²</th>
<th>Coalescing Area Ft²</th>
<th>Sludge Gal.</th>
<th>Wt Lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExV-2</td>
<td>10</td>
<td>62” X 29” X 31”</td>
<td>40</td>
<td>264</td>
<td>45</td>
<td>720</td>
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<tr>
<td>ExV-3</td>
<td>20</td>
<td>96” X 29” X 62”</td>
<td>80</td>
<td>396</td>
<td>60</td>
<td>980</td>
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<tr>
<td>ExV-4</td>
<td>30</td>
<td>108” X 29” X 62”</td>
<td>120</td>
<td>528</td>
<td>75</td>
<td>1250</td>
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<tr>
<td>ExV-6</td>
<td>40</td>
<td>120” X 29” X 72”</td>
<td>160</td>
<td>702</td>
<td>75</td>
<td>1400</td>
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<tr>
<td>ExV-8</td>
<td>50</td>
<td>134” X 29” X 72”</td>
<td>200</td>
<td>1056</td>
<td>75</td>
<td>1600</td>
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<tr>
<td>ExV-12</td>
<td>70</td>
<td>134” X 48” X 72”</td>
<td>280</td>
<td>1584</td>
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<td>ExV-16</td>
<td>100</td>
<td>134” X 60” X 72”</td>
<td>400</td>
<td>2112</td>
<td>140</td>
<td>3300</td>
</tr>
</tbody>
</table>
VEW
Vehicle Wash Water Treatment & Recycling Systems

VEW
Vehicle Wash Water Treatment Systems

www.wash-water-treatment.com

VEW: Automated Pressurization Supply Modules

The PSM Pressurization Supply Module systems are provided to store VEW 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: Automated 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 consists of the following components:
- Adjustable flow rate air operated diaphragm pump
- Air preparation and control assembly
- Level switches (high & low)
- Automatic controls
- Pump skid

Pump Flow Rate Adjustability
The pump flow rate can be adjusted via the air control assembly. The air control assembly contains an air filter regulator for pressure control and a fine adjustment, precision air needle valve for flow control. By adjusting these components you can set the desired flow rate.

2309 N. Ringwood Rd., Ste G McHenry, IL 60050 USA
815.344.2960 Fax: 847.487.9218
www.wash-water-treatment.com www.panamenv.com panam@panamenv.com
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### TB: Triple Basin Water Treatment System

The TB series Triple Basin collection sump systems are provided to collect wash water from the washrub and allow a below grade location for solids to settle out, aeration and EnBio™ 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
- Designed for direct soil burial

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.

### Pre-fabricated, reinforced fiberglass below grade pretreatment

#### Economical alternative to concrete

#### 3-stage processing, volumes of 225 to 3,000 gallons

<table>
<thead>
<tr>
<th>Model</th>
<th>Tank Gals</th>
<th>Total Gals</th>
<th>Fitting Size</th>
<th>Tank L X W X H</th>
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<tbody>
<tr>
<td>TB-2442-225</td>
<td>75</td>
<td>225</td>
<td>4”</td>
<td>84” X 24” X 42”</td>
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<tr>
<td>TB-2460-300</td>
<td>100</td>
<td>300</td>
<td>4”</td>
<td>84” X 24” X 60”</td>
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<tr>
<td>TB-2478-450</td>
<td>150</td>
<td>450</td>
<td>4”</td>
<td>84” X 24” X 78”</td>
</tr>
<tr>
<td>TB-3084-750</td>
<td>250</td>
<td>750</td>
<td>4”</td>
<td>102” X 30” X 84”</td>
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<td>TB-3672-900</td>
<td>300</td>
<td>900</td>
<td>4”</td>
<td>120” X 36” X 72”</td>
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<tr>
<td>TB-3678-1050</td>
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<td>1050</td>
<td>4”</td>
<td>120” X 36” X 78”</td>
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<td>TB-4278-1350</td>
<td>450</td>
<td>1350</td>
<td>4”</td>
<td>138” X 42” X 78”</td>
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Fittings are NPT
Tank MOC: FRP

<table>
<thead>
<tr>
<th>Model</th>
<th>Tank Gals</th>
<th>Total Gals</th>
<th>Fitting Size</th>
<th>Tank L X W X H</th>
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<tbody>
<tr>
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<td>1500</td>
<td>4”</td>
<td>138” X 42” X 84”</td>
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<tr>
<td>TB-42102-1800</td>
<td>600</td>
<td>1800</td>
<td>4”</td>
<td>138” X 42” X 102”</td>
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<tr>
<td>TB-4850-2100</td>
<td>700</td>
<td>2100</td>
<td>4”</td>
<td>162” X 48” X 90”</td>
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<td>900</td>
<td>2700</td>
<td>4”</td>
<td>162” X 48” X 114”</td>
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<tr>
<td>TB-6084-3000</td>
<td>1000</td>
<td>3000</td>
<td>4”</td>
<td>196” X 60” X 84”</td>
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<tr>
<td>Vents</td>
<td></td>
<td></td>
<td>2”</td>
<td>One per tank</td>
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</table>

Fittings are NPT
Tank MOC: FRP
OSF: High Performance Industrial Oil Water Separators

The OSF series above ground oil water separators are a high performance compact, corrosion resistant FRP design that can be used as a stand-alone separation device where your application requires simple treatment for oil, fuels, BTEX products and solids removal or as part of a larger system.

The OSF design can remove many oil types and a very wide range of petroleum distillates. The design can be mounted to a trailer for mobile applications, many options are offered to customize to your project. 5 sizes are offered for 5-50 GPM.

Discharge Performance: 10 mg/L or less, 30-micron, non-emulsified, free & dispersed oil droplets.

Coalescing Media Design: Using the Flopak separation media allows the OSFs to provide a high performance design in an inexpensive, light weight, compact concept. The Flopak media is easily removed, cleaned and replaced.

Cover & Tank: The tank, cover and fittings are all constructed of fiberglass for long life, light weight and low corrosion susceptibility. The cover includes quick remove T handle fasteners and a cover vapor gasket.

Hopper Bottom: The Tank design includes a V-hopper bottom for solids containment with sludge outlets on both sides of the tank.

Oil Reservoir/Effluent Chamber: The OSF design provides an on board oil reservoir and an expandable effluent chamber for pumping treated water directly from the tank.

Oil Skimmer: An adjustable slotted, rotary pipe oil skimmer is provided to skim floating oils and remove them from the tank.

Inlet Diffuser: An inlet diffuser is provided to diffuse incoming water velocity, energy and spread the flow across the tank width and depth.

Options List (partial)
- Anchor hold down brackets
- Retpak secondary media
- Expanded effluent chamber
- Influent feed pump
- Effluent pumpout
- Oil pumpout
- Sludge pumpout
- High oil/water level alarms
- Level switches installed
- Elevation stand
- Oil transfer piping
- GAC effluent filter
- Vent vapor scrubber
- High temperature designs
- Trailer mounted system
- Skid mounted system
- Container mounted system
- Custom systems

Flow rates to 5,000 GPM and larger available

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>OS-2-F</td>
<td>5</td>
<td>62&quot; X 18&quot; X 31&quot;</td>
<td>25</td>
<td>7</td>
<td>90</td>
</tr>
<tr>
<td>OS-4-F</td>
<td>10</td>
<td>62&quot; X 29&quot; X 31&quot;</td>
<td>50</td>
<td>13</td>
<td>120</td>
</tr>
<tr>
<td>OS-8-F</td>
<td>25</td>
<td>72&quot; X 29&quot; X 42&quot;</td>
<td>125</td>
<td>13</td>
<td>180</td>
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<tr>
<td>OS-12-F</td>
<td>35</td>
<td>72&quot; X 40&quot; X 42&quot;</td>
<td>180</td>
<td>25</td>
<td>350</td>
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<tr>
<td>OS-16-F</td>
<td>50</td>
<td>72&quot; X 52&quot; X 42&quot;</td>
<td>240</td>
<td>37</td>
<td>425</td>
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</tbody>
</table>

OSF: High Performance Industrial Oil Water Separators
**OSe: High Performance Industrial Oil Water Separators**

The OSe series above ground oil water separators are a high performance compact, corrosion resistant 304 stainless steel design that can be used as a stand-alone separation device where your application requires simple treatment for oil, fuels, BTEX products and solids removal or as part of a larger integrated system.

The OSe design can remove many oil types and a very wide range of petroleum distillates. The design can be mounted to a trailer for mobile applications, many options are offered to customize to your project. Many standard sizes are offered for 5-250 GPM and larger.

**Discharge Performance:** 10 mg/L or less, 30-micron, non-emulsified, free & dispersed oil droplets.

**Coalescing Media Design:** Using the Flopak separation media allows the OSe to provide a high performance design in an inexpensive, light weight, compact concept. The Flopak media is easily removed, cleaned and replaced.

**Cover & Tank:** The tank, cover and fittings are all constructed of 304 SS for long life and low corrosion susceptibility. The cover includes attaching fasteners and a cover vapor gasket.

**Hopper Bottom:** The Tank design includes a V-hopper bottom for solids containment with sludge outlets on both sides of the tank.

**Oil Reservoir/Effluent Chamber:** The OSe design offers optional on board oil reservoir and effluent chamber for pumping treated water and/or oils directly from the tank.

**Oil Skimmer:** An adjustable slotted, rotary pipe oil skimmer is provided to skim floating oils and remove them from the tank.

**Inlet Diffuser:** An inlet diffuser is provided to diffuse incoming water velocity, energy and spread the flow across the tank width and depth.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OSe-2</td>
<td>5</td>
<td>62&quot; X 18&quot; X 31&quot;</td>
<td>25</td>
<td>7</td>
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<tr>
<td>OSe-4</td>
<td>10</td>
<td>62&quot; X 29&quot; X 31&quot;</td>
<td>50</td>
<td>13</td>
<td>120</td>
</tr>
<tr>
<td>OSe-8</td>
<td>25</td>
<td>72&quot; X 29&quot; X 42&quot;</td>
<td>125</td>
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<tr>
<td>OSe-12</td>
<td>35</td>
<td>72&quot; X 40&quot; X 42&quot;</td>
<td>180</td>
<td>25</td>
<td>350</td>
</tr>
<tr>
<td>OSe-16</td>
<td>50</td>
<td>72&quot; X 52&quot; X 42&quot;</td>
<td>240</td>
<td>37</td>
<td>425</td>
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<tr>
<td>OSe-24</td>
<td>72</td>
<td>82&quot; X 40&quot; X 53&quot;</td>
<td>353</td>
<td>50</td>
<td>1150</td>
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<td>465</td>
<td>50</td>
<td>1320</td>
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<td>580</td>
<td>50</td>
<td>1660</td>
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<tr>
<td>OSe-64</td>
<td>180</td>
<td>82&quot; X 52&quot; X 77&quot;</td>
<td>700</td>
<td>65</td>
<td>1980</td>
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<td>OSe-80</td>
<td>240</td>
<td>82&quot; X 64&quot; X 77&quot;</td>
<td>1055</td>
<td>85</td>
<td>2150</td>
</tr>
</tbody>
</table>

Flow rates to 5,000 GPM and larger available.
EnBio™: Biological Treatment System

Car wash systems and washwater treatment systems are typically not designed to remove washwater odors. Through the decomposition of accumulated contaminants in the water and existing bacteria as well as certain chemicals, odorous gases can be created. The EnBio™ product eliminates odors by out competing naturally occurring bacteria, consuming the food source and forcing their die off so that those bacteria cannot cause odors.

Bacterial digestion is the process of bacteria, consuming organic matter. Enzymes act to break the organic matter into water soluble nutrients, which the bacteria then digest. Using complex chemical reactions, the bacteria metabolize the organic waste down to water and carbon dioxide (the final metabolic waste products), providing the bacteria with energy for growth and reproduction. Organic waste is consumed by the bacteria, used as nutrients by the bacteria and is no longer present to produce odors, sludge, pollution, or competitive bacterial growth.

EnBio™ is a combination of all natural bacteria, enzymes with nutrients. EnBio bacteria/enzyme blends are targeted to the food sources typically found in an industrial wastewater stream and treatment system.

EnBio™ bacteria cling to the containers they are injected into and they propagate at an extreme speed, doubling their number every 15-20 minutes. They become dispersed throughout the entire system eating non-stop 24 hrs/day which means coalescing media stays cleaner, filter bags (reducing bag changes), valves, sight glasses, flow meter sensors, pump heads, piping and other devices in the piping system stay cleaner requiring less cleanup. Wherever the water goes the bacteria goes too and continue to eat the contaminants.

Dosing

Liquid can be manually or automatically dosed into the treatment system with our dosing system which gives you multiple dosing events throughout the day/week.

The daily EnBio™ concentration added is 20 ounces per 500 to 1,500 gallon system per day. You will set the dosing system per the IOM instructions to continuously dose throughout the day, seven days per week. EnBio™ is available in 1, 5 and 55 gallon volumes.

EnBio™ bacteria and enzymes are chosen for their ability to selectively consume targeted contaminants such as fuels, oils, solids and sludge. We select only facultative strains of bacteria that function and flourish in aerobic (with oxygen) or anaerobic (oxygen depleted) environments. Our bacteria are most effective in an aerobic state working 5-7 times faster. Other factors important to a bacteria’s existence are high and low pH, chemical shock and temperature as well as sufficient food source. EnBio bacteria flourish best the closer to the neutral pH of 7 the water is. They are resistant to disinfectants like chlorine up to 150 PPM.

EnBio™ bacteria consume contaminants such as organic matter, oils, grease, other petroleum products like heavy and light fuels (DNAPL/LNAPL) and soluble solvents.

The bacteria propagate within sump bottom solids reducing the sludge load, freeing oils and grease and digesting them. Using EnBio™ can reduce sludge hauling frequency and cost.

For use in:
- Oil water separators
- Car and truck wash treatment /recycling systems
- Marine bilges
- Recycled washwater storage tanks
- Wash facility basins/collection sumps
- Groundwater remediation systems
- API oil water separators
- Septic leach fields plugged with petroleum products
- Bilge water treatment facilities
SuperAerator™: Aeration System

For odor and contaminant reduction with bio-treatment aeration is required in order to maintain sufficient oxygen content for the EnBio™ bacteria treatment system.

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

Compare With Traditional Odor Reduction Measures

The use of the SuperAerator™ in combination with the EnBio™ system offers a more simplistic natural treatment solution when compared to chemical and gas oxidants such as chlorine, hydrogen peroxide and ozone.

These oxidants can corrode metallic system components and other items that the water comes into contact with. Ozone requires constant addition to be effective as the ozone molecule continuously degrades until it reverts to oxygen, which takes about 1 hour. When AOX (Advanced Oxidation) is used where hydrogen peroxide is combined with ozone the cost to keep the oxidation process is even greater.

The EnBio™ microbes do not cause corrosion and the self-increasing bacteria colony builds and maintains itself reducing your need to continuously add EnBio™ media.

- Retrofit existing systems
- Simple installation
- Fit most brands of sumps and treatment systems

SuperAerator™ Equipment Detail

<table>
<thead>
<tr>
<th>Model</th>
<th>Air CFM</th>
<th>Diffuser Size</th>
<th>Power</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>SA-3</td>
<td>3</td>
<td>(1) 2”D X 24”L</td>
<td>60/50Hz</td>
<td>115V/1pH</td>
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<tr>
<td>SA-5</td>
<td>5</td>
<td>(1) 2”D X 24”L</td>
<td>115V/1pH</td>
<td></td>
</tr>
<tr>
<td>SA-7</td>
<td>7</td>
<td>(1) 2”D X 24”L</td>
<td>115V/1pH</td>
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<tr>
<td>Diffuser</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA Syst.</td>
<td>14” X 12” X 8”</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XL Syst.</td>
<td>20” X 20” X 8”</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Larger aeration systems available for any system water volume.
Bio-Digester™: Modular Biological Digestion Systems

The Bio-Digester™ bio-treatment systems provide advanced motion bed bio-technology in a compact footprint for organics reduction in washrack facilities where treat and discharge or recycling of wash water is desired.

The Bio-Digester™ utilizes the EnBio™ microbes, aeration and a large submerged surface area to maintain the bacterial colony in order to consume contaminants such as oils, sludge, soaps, wax and fuels digestion and convert them to carbon dioxide and water.

The Bio-Digester™ is a gravity flow system constructed of industrial materials.

**System Design Features:**
- Bio-contact tank, FRP construction, covered with inspection hatch and 2” NPT vent
- SuperAerator™ system with 7 CFM air pump, diffuser system
- EnBio™ bacteria injection system with programmable timer settings to meter EnBio™ bacteria media.
- ¾ HP circulation pump with bottom diffuser for flow distribution
- Master Control Panel (MCP): NEMA 4X, 115V/1pH/60Hz
- System skid: MCP, SuperAerator™, EnBio™ injection system and recirculation pump are mounted on this skid. Dimensions: 36”W X 24”L X 48”H. The skid mounts next to the contact tank. Recirculation pump plumbing to/from tank provided.
- Bio-Pac™ biological medium, EnBio™ media, 10 gallons are included

### Bio-Digester™ Options

<table>
<thead>
<tr>
<th>Model</th>
<th>pH Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>pHC</td>
<td></td>
</tr>
</tbody>
</table>

### Bio-Digester™ Detail

<table>
<thead>
<tr>
<th>Model</th>
<th>42” – 72” Diameter</th>
<th>Tank D X H</th>
<th>Fitting Size</th>
<th>Surface AreaFt²</th>
<th>FT gals</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD-300-15</td>
<td>42” X 60”</td>
<td>2”</td>
<td>300</td>
<td>2280</td>
<td>2”</td>
</tr>
<tr>
<td>BD-600-30</td>
<td>48” X 90”</td>
<td>3”</td>
<td>600</td>
<td>4560</td>
<td>3”</td>
</tr>
<tr>
<td>BD-800-40</td>
<td>60” X 96”</td>
<td>4”</td>
<td>800</td>
<td>6080</td>
<td>4”</td>
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<tr>
<td>BD-1000-50</td>
<td>72” X 72”</td>
<td>5”</td>
<td>1000</td>
<td>7600</td>
<td>5”</td>
</tr>
<tr>
<td>BD-1500-65</td>
<td>72” X 96”</td>
<td>6”</td>
<td>1500</td>
<td>9144</td>
<td>6”</td>
</tr>
</tbody>
</table>

*Fittings are NPT*  
*Tank MOC: FRP*
Mud Blaster™: High Volume Water Blast Systems

The 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.

**Standard Features:**
- 500 - 750 gallon clean water storage tank
- 20, 30 & 50 GPM models offered
- Multi-stage, high head centrifugal pump
- 10 HP, TEFC motor
- Operating pressure: 200 psi
- Fork liftable pump skid
- Fresh water makeup valve
- Low water level pump shutdown protection
- Automatic pump bypass on spray nozzle shutoff
- 50’ hose with variable stream nozzle and on/off lever shutoff valve
- NEMA 4X controls with on/off and overload protection and power disconnect
- 230/460V/3Ph/60Hz power

**Options:**
- Automatic fresh water resupply system drawing from PSM or other fresh water source
- Hose reel
- Remote operation stations
- Larger storage tank volume
- Dual Blaster models with two blaster pumps, hoses, nozzles and controls for separate Mud Blaster blast stations on same skid.
- Wall mounted system

**Mud Blaster™ Equipment Detail**

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow GPM</th>
<th>Dimensions L X W X H</th>
<th>Volume Gal.</th>
<th>PSI</th>
<th>Skid Lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUD-20</td>
<td>20</td>
<td>30” X 48” X 52”</td>
<td>500</td>
<td>200</td>
<td>560</td>
</tr>
<tr>
<td>MUD-30</td>
<td>30</td>
<td>30” X 48” X 52”</td>
<td>500</td>
<td>200</td>
<td>580</td>
</tr>
<tr>
<td>MUD-50</td>
<td>50</td>
<td>36” X 48” X 52”</td>
<td>750</td>
<td>200</td>
<td>600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gallons</th>
<th>Tank Dims:</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>48”D X 73”H</td>
</tr>
<tr>
<td>750</td>
<td>48”D X 103”H</td>
</tr>
</tbody>
</table>

**Mud Blaster™ Options**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWR</td>
<td>Fresh water resupply</td>
</tr>
<tr>
<td>Reel</td>
<td>Hose reel, manual</td>
</tr>
</tbody>
</table>
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.

**The neutralization system configuration includes:**
- HDPE tank
- Full cover with vapor gasket and inspection hatch
- Mixer with TEFC motor
- 316 SS impeller shaft and axial flow impeller(s)
- One chemical metering pump (optional second pump available)
- pH probe with quick release assembly
- pH controller
- NEMA 4X control panel - 115V/1pH/60Hz and 230/460V/3pH/60 Hz power

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

**Options:**
- Chart recorder
- Effluent diversion valve (available on continuous flow systems only)
- PLC controls
- Explosion proof design
- 2nd metering pump & controls
- Alternate tank construction: FRP, polypropylene, coated steel, 304/316 stainless steel.

Larger size systems available.

---

**EpH Systems Equipment Detail**

<table>
<thead>
<tr>
<th>Model</th>
<th>Flow GPM</th>
<th>Dimensions D X H</th>
<th>Volume Gal.</th>
<th>Inlet/outlet size</th>
<th>Wt Lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>EpH.05</td>
<td>5</td>
<td>22&quot; X 48&quot;</td>
<td>50</td>
<td>1.5&quot;</td>
<td>90</td>
</tr>
<tr>
<td>EpH.10</td>
<td>10</td>
<td>30&quot; X 48&quot;</td>
<td>100</td>
<td>1.5&quot;</td>
<td>120</td>
</tr>
<tr>
<td>EpH.15</td>
<td>15</td>
<td>31&quot; X 62&quot;</td>
<td>150</td>
<td>2&quot;</td>
<td>180</td>
</tr>
<tr>
<td>EpH.25</td>
<td>25</td>
<td>39&quot; X 65&quot;</td>
<td>250</td>
<td>2&quot;</td>
<td>200</td>
</tr>
<tr>
<td>EpH.30</td>
<td>30</td>
<td>45&quot; X 60&quot;</td>
<td>300</td>
<td>3&quot;</td>
<td>265</td>
</tr>
<tr>
<td>EpH.40</td>
<td>40</td>
<td>52&quot; X 60&quot;</td>
<td>400</td>
<td>3&quot;</td>
<td>310</td>
</tr>
<tr>
<td>EpH.50</td>
<td>50</td>
<td>60&quot; X 58&quot;</td>
<td>500</td>
<td>3&quot;</td>
<td>375</td>
</tr>
</tbody>
</table>
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 provide:**
- Effluent pumping
- Effluent solids filtration
- AQAM filtration
- GAC (carbon) filtration
- Local or integrated controls
- Other specialty filtration medias/resins
- Customization to wastestream contaminants

**Effluent Pump:** A pump is provided to transfer wastewater to the Filter Pac filters.

**Effluent Solids Filter:** Solids are filtered in one or two stages to reduce filterable solids down to 15 and 5 micron particles.

**AQAM Filtration:** FRP tank, PVC fittings for long life, light weight and low corrosion susceptibility. For oils, fuels, petroleum, distillates and a variety of metals.

**GAC Filtration:** FRP tank, PVC fittings for long life, light weight and low corrosion susceptibility.

**Products Removed:**
- Oils
- Fuels
- Suspended solids
- Metals
- Minerals
- Fluoride
- BTEX
- VOCs
- HFOs
- Bunkers
- LNAPL
- DNAPL
- Pesticides

**Media Types**
Multiple resin types and media are offered for various contaminants such as zinc, fluoride, metals, pesticides and other materials.
VEW
Vehicle Wash Water Treatment & Recycling Systems

MicroSTAX™
Industrial Grade Pretreatment Systems
Flow Rates: 2-300 GPM

The Pan America Environmental MicroSTAX™ systems typically used prior to the E Extreme V™ and E 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.

Features Include:
• No power requirements and no moving parts, which means minimal maintenance.
• Uniform mixing in the pipe cross-section promotes uniform flocculation.
• No mixing dead zones.
• Chemical metering systems: coagulation, flocculation, pH

Designed for a particular flow range, each pipe flocculator can be configured with:
• Multiple chemical injection ports for up to three stage treatment (coagulant, and flocculants).
• Centralized, valved chemical pump connection ports.
• Multiple sample ports.
• In-line monitoring probe fittings (pH, suspended solids, conductivity or other use).
• Flanged and NPT connections.

MicroSTAX™ flocculators come with an A36 carbon steel support frame as either a tank mount hanger system or a skid-mounted design for mobility/temporary use or for permanent, off-tank installations.

Unit sizes range from 1.5” to 10” pipe and can be supplied in a variety of lengths and construction.

Other diameters are available Upon request. MicroSTAX™ flocculators can be customized and built to meet specific project requirements.

MicroSTAX™ shown mounted to an E Extreme V™ system

MicroSTAX™ shown separately
VEW Process
The VEW modules are shown below in order of flow for a full recycle system.
Washbay Solutions: Design Concepts

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 the following pretreatment operations:

- Reduction of heavy solids load at washpad.
- Sets up solids in the collection sump(s)
- Assists self-breaking detergents to break emulsions prior to the VEW system.
- Provides a working water volume for biological treatment and recycling hydraulic demands.

When designing keep the following rules of thumb in mind:

- The bigger the better (make room for equipment, operator movement and vehicle size)
- Eliminate rainwater runoff to the pad
- Locate drain/trough along pad center, side or end opposite from the wash area to allow solids to stay on the washpad surface, thereby reducing accumulation in the drain/trough/sump system.
- Pitch pad drainage to drain/trough
- Don’t use an aggressive pitch on pad or tough, help the solids stay on the pad and in the trough, fast moving water moves solids. A 1/8” per foot drop may be sufficient to limit water velocity.

The washpad should provide a controlled runoff design with pad pitch toward the trough or drain, which will encourage proper draining of the pad.

The most common designs are shown in this catalog. Larger and/or heavy equipment wash racks often use a sump design that allows for high solids concentrations and ease of solids removal as in a sump with a ramp design.

**Collection Sump** design is important as it begins your treatment process by providing a place for bulk solids to drop out prior to finer treatment by the VEW system. Probably THE most popular sump design is the triple or double basin that provides multiple chambers to increase the settlement of solids and also provides a final sump point where pumpout of the water to the VEW system is performed.

**Be Aware:** that large water collection tanks and chambers also pose an odor creation issue due to the solids settling out and accumulating. Be sure to use our EnBio™ and SuperAerator™ treatment systems to eliminate odor problems.

**Centrally Pitched Drain Designs** – For small to medium size wash racks where concrete surface loadings are not an issue.

**Side Drain Designs** – For sites with limited space and high mud and dirt volumes are expected.

**Entrance and Exit Drain Designs** - For limited space facilities.

**Pre-Wash & Final Wash Designs** - For high volume facilities requiring pre-wash. Separation of de-mucking operation from final wash will reduce water treatment costs by not allowing heavy solids loadings to reach the treatment system.

**Heavy Solids Designs** - These designs incorporate a heavy solids de-watering and handling area. Used where excessive amounts of mud and dirt are anticipated.

**High Vehicle Volume Facility** – Where heavy wash traffic is planned, multiple, parallel wash bays can be designed. Drawings are conceptual only. They are not PE engineered and/or certified documents. These are for lay out and site planning only and serve as a guide to visualize the final design.

PAE recommends wash and treatment equipment to be enclosed or covered to prevent weather damage and to protect from freezing and long term UV effects.

Pan America Environmental recommends the use of a professional facility engineer to review your facility plans and for proper design and construction per state and local codes.
Washbay Solutions:
Design Concepts
A few wash bay design concepts are provided to give you a direction in design. As there are a multitude of configurations that could be used you will need to review your facility for the best layout. More layouts and ideas are available at the VEW website in more detail for your reference. Go to http://www.wash-water-treatment.com

Facility Design Assistance
Pan America can assist in the initial washpad/washbay, sump and treatment system layout if desired. We can produce a 3D drawing set to give a full design concept then you can work with your engineer to make sure the facility is designed and built to your vision. Contact PAE for a quote on this service.
Washbay Solutions:
Heavy Duty Wash Rack
Design Concepts

www.wash-water-treatment.com
- Wash Water Recycling and Treatment Systems
- Replacement Parts
- Accessories
- Detergent

VEW
Vehicle Wash Water Treatment & Recycling Systems
Containerized Treatment Systems: Options and Designs

All VEW systems can be provided containerized for simplified installation, use in remote and extreme conditions, mobile installations and wherever rapid deployment and/or protection from the elements are desired.

Features
- Standard 10, 20, 40 ft standard, high cube and flat rack containers
- Non-insulated
- Double cargo doors on end
- Lighting
- Master Control Panel (MCP)
- Power receptacles
- Passive cross ventilation system
- Central plumbing connection panel
- Central power connection panel

Options:
- Insulation
- Rollup door(s)
- Window(s)
- Active ventilation
- Air conditioning
- Heating
- Alarms
- Separate rooms
- Man access side door(s)
- Custom flooring
- Custom exterior colors
Consumables

Flopak Coalescing Media

<table>
<thead>
<tr>
<th>Media Part #</th>
<th>VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP-2.5PV</td>
<td>2</td>
</tr>
<tr>
<td>FP-4.5PV</td>
<td>4</td>
</tr>
<tr>
<td>FP-8.5PV</td>
<td>8</td>
</tr>
<tr>
<td>FP-12.5PV</td>
<td>12</td>
</tr>
<tr>
<td>FP-16.5PV</td>
<td>16</td>
</tr>
</tbody>
</table>

AQAM Media

<table>
<thead>
<tr>
<th>AQAM Part #</th>
<th>VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>AQM-2</td>
<td>2</td>
</tr>
<tr>
<td>AQM-4</td>
<td>4</td>
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<td>AQM-8</td>
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<td>AQM-12</td>
<td>12</td>
</tr>
<tr>
<td>AQM-16</td>
<td>16</td>
</tr>
</tbody>
</table>

Retpak Coalescing Media

<table>
<thead>
<tr>
<th>Media Part #</th>
<th>VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>RP-2.5PV</td>
<td>2</td>
</tr>
<tr>
<td>RP-4.5PV</td>
<td>4</td>
</tr>
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<td>RP-8.5PV</td>
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<tr>
<td>RP-12.5PV</td>
<td>12</td>
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<tr>
<td>RP-16.5PV</td>
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</table>

EnBio Media

<table>
<thead>
<tr>
<th>Media Part #</th>
<th>VEW Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnBio-5</td>
<td>5 gal pail</td>
</tr>
<tr>
<td>EnBio-1-4</td>
<td>(4) 1 gal bottle</td>
</tr>
<tr>
<td>EnBio-55</td>
<td>55 gal drum</td>
</tr>
</tbody>
</table>

Emulsion Break Detergent

<table>
<thead>
<tr>
<th>Part #</th>
<th>VEW Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESB-5</td>
<td>5 gal pail</td>
</tr>
<tr>
<td>ESB-1-4</td>
<td>(4) 1 gal bottle</td>
</tr>
<tr>
<td>ESB-55</td>
<td>55 gal drum</td>
</tr>
</tbody>
</table>

Filter Bags

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag-1-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-5-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-10-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-25-20PE-C</td>
<td>(case volume, 25 pcs)</td>
</tr>
</tbody>
</table>

1st number = micron rating

EnBio Media

<table>
<thead>
<tr>
<th>Media Part #</th>
<th>VEW Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>EnBio-5</td>
<td>5 gal pail</td>
</tr>
<tr>
<td>EnBio-1-4</td>
<td>(4) 1 gal bottle</td>
</tr>
<tr>
<td>EnBio-55</td>
<td>55 gal drum</td>
</tr>
</tbody>
</table>

Emulsion Break Detergent

<table>
<thead>
<tr>
<th>Part #</th>
<th>VEW Volume</th>
</tr>
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<tbody>
<tr>
<td>ESB-5</td>
<td>5 gal pail</td>
</tr>
<tr>
<td>ESB-1-4</td>
<td>(4) 1 gal bottle</td>
</tr>
<tr>
<td>ESB-55</td>
<td>55 gal drum</td>
</tr>
</tbody>
</table>

Filter Bags

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag-1-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-5-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-10-20PE-C</td>
<td></td>
</tr>
<tr>
<td>Bag-25-20PE-C</td>
<td>(case volume, 25 pcs)</td>
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</tbody>
</table>

1st number = micron rating
VEW Parts

### Effluent Pumpout System

<table>
<thead>
<tr>
<th>Part #</th>
<th>for VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>96081967</td>
<td>VEW2</td>
</tr>
<tr>
<td>96081969</td>
<td>VEW4</td>
</tr>
<tr>
<td>96084098</td>
<td>VEW8</td>
</tr>
<tr>
<td>96084101</td>
<td>VEW12</td>
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<tr>
<td>96522980</td>
<td>VEW16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part #</th>
<th>for VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEW-2 Effluent Switch</td>
<td>VEW2</td>
</tr>
<tr>
<td>VEW-4 Effluent Switch</td>
<td>VEW4</td>
</tr>
<tr>
<td>VEW-8 Effluent Switch</td>
<td>VEW8</td>
</tr>
<tr>
<td>VEW-12 Effluent Switch</td>
<td>VEW12</td>
</tr>
<tr>
<td>VEW-16 Effluent Switch</td>
<td>VEW16</td>
</tr>
</tbody>
</table>

### Flowmeters

<table>
<thead>
<tr>
<th>Part #</th>
<th>for GPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>5847.238</td>
<td>0-10</td>
</tr>
<tr>
<td>5847.239</td>
<td>0-15</td>
</tr>
<tr>
<td>5801.330</td>
<td>0-40</td>
</tr>
</tbody>
</table>

### Filter Bags

<table>
<thead>
<tr>
<th>Part #</th>
<th>for VEW Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bag-1-20PE-C</td>
<td>VEW2</td>
</tr>
<tr>
<td>Bag-2-20PE-C</td>
<td>VEW4</td>
</tr>
<tr>
<td>Bag-3-20PE-C</td>
<td>VEW8</td>
</tr>
<tr>
<td>Bag-4-20PE-C</td>
<td>VEW12</td>
</tr>
<tr>
<td>Bag-5-20PE-C</td>
<td>VEW16</td>
</tr>
</tbody>
</table>

### Parts

**VEW Effluent Pump**

- Pump Part #: 96081967, 96081969, 96084098, 96084101, 96522980 for VEW models

**VEW Effluent Level Switch**

- Part #: VEW-2 Effluent Switch for VEW2
- Part #: VEW-4 Effluent Switch for VEW4
- Part #: VEW-8 Effluent Switch for VEW8
- Part #: VEW-12 Effluent Switch for VEW12
- Part #: VEW-16 Effluent Switch for VEW16

**Filter Bags**

- Bag-1-20PE-C
- Bag-5-20PE-C
- Bag-10-20PE-C
- Bag-15-20PE-C
- Bag-20-20PE-C

**Flowmeters**

- Part #: 5847.238 for 0-10 GPM
- Part #: 5847.239 for 0-15 GPM
- Part #: 5801.330 for 0-40 GPM

### Influent Pumpout System

<table>
<thead>
<tr>
<th>Part #</th>
<th>for IFS Model</th>
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<tbody>
<tr>
<td>IFP-0.5-MBN-AO</td>
<td>IFS-05-AO</td>
</tr>
<tr>
<td>IFP-1.0-MBN-AO</td>
<td>IFS-10-AO</td>
</tr>
<tr>
<td>IFP-1.5-MBN-AO</td>
<td>IFS-15-AO</td>
</tr>
<tr>
<td>IFP-2.0-MBN-AO</td>
<td>IFS-20-AO</td>
</tr>
</tbody>
</table>

**Flowmeters**

- Part #: 8262H022 for ¼” NPT
- Part #: 8210G094 for ½” NPT

**Parts**

- Valve, Solenoid

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2309 N. Ringwood Rd., Ste G McHenry, IL 60050 USA
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www.wash-water-treatment.com www.panamenv.com panam@panamenv.com
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VEW
Vehicle Wash Water Treatment & Recycling Systems

VEW (Pressurization Supply Module)

- VEW PSM Pump
  - Pump Part # for PSM Model
    - 47906: PSM-150
    - QD75S: PSM-300
    - QD100S: PSM-500

- VEW PSM Level Switch
  - Part # for VEW Model
    - VEW-2 PSM Switch: VEW2
    - VEW-4 PSM Switch: VEW4
    - VEW-8 PSM Switch: VEW8
    - VEW-12 PSM Switch: VEW12
    - VEW-16 PSM Switch: VEW16

Oil Skimmer

- Cylindrical Oil Skimmer
  - Skimmer Part# for VEW Model
    - 2X5PV: VEW2
    - 2X12PV: VEW4
    - 3X28PV: VEW8
    - 3X36PV: VEW12
    - 3X36PV: VEW16

SuperAerator System

- Air compressor
  - Pump Part # for SuperAerator Model
    - SA3-AP: SuperAerator 3 /XL
    - SA5-AP: SuperAerator 5 /XL
    - SA7-AP: SuperAerator 7 /XL

- Aeration diffuser
  - Part # for SuperAerator Model
    - SA-DIF3: SuperAerator 3 /XL
    - SA-DIF5: SuperAerator 5 /XL
    - SA-DIF7: SuperAerator 7 /XL

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EpH Neutralization System

Mixer

Chemical Metering Pump

pH Probe

pH Controller