

BPOWS+

**BYPASS UNDERGROUND OIL/ WATER
SEPARATORS**



BPOWS+ Oil/ Water Separators with Coalescence:

BPOWS+ The Bypass Oil Water Separators are engineered to collect sand, grit, grease and free oil (hydrocarbons and other petroleum products) from storm water runoff, spills and vehicle maintenance operations. They are equipped with internal bypass to direct peak flow without disturbing the collected grit/ dirt and oil inside the separator.

Function:

The Oil/ Water Separator is a stationary underground, stormwater treatment vessel, filled with water. Internal baffles and inclined parallel plates plus additional cartridge coalescers to accelerate the oil/ water separation process. Waste accumulates within the separator while effluent is discharged by gravity. The system is designed for access from above for observation, maintenance and cleaning.

OUR EXPERIENCE

We offers customized Oil Separator Tank packages for the reduction of oil and gas in storm and drainage water. Our company maintains project management and quality assurance standards that are in compliance with the requirements of the leading oil and petrochemical companies across the globe.

We optimized process design and comprehensive project management can produce a cost-effective package.

Characteristics:

- Designed according to API Standard and EN 858-1/2
- Outlet parameters lower than 5 ppm (Class 1) - Can drain to surface water.
- Includes a dedicated sand and solids settling chambers.
- Includes Inclined Parallel Plates in Stainless Steel
- Vessel manufactured in Polyurethane Tar/ Zinc Rich Epoxy Coated Carbon Steel.
- Oil and hydrocarbon separation and solids settling chambers.
- Accumulation of oil and hydrocarbon on water surface.
- Coalescing Cartridges in Stainless Steel with large specific surface: 240 m²/m³.
- Polishing coalescing cartridge on final stage.
- Oil removal by upper manhole.
- Internal Bypass to direct Peak Flow during storm to outlet of tank without affecting accumulated dirt and oil.
- Level sensors for oil interface layer (option)

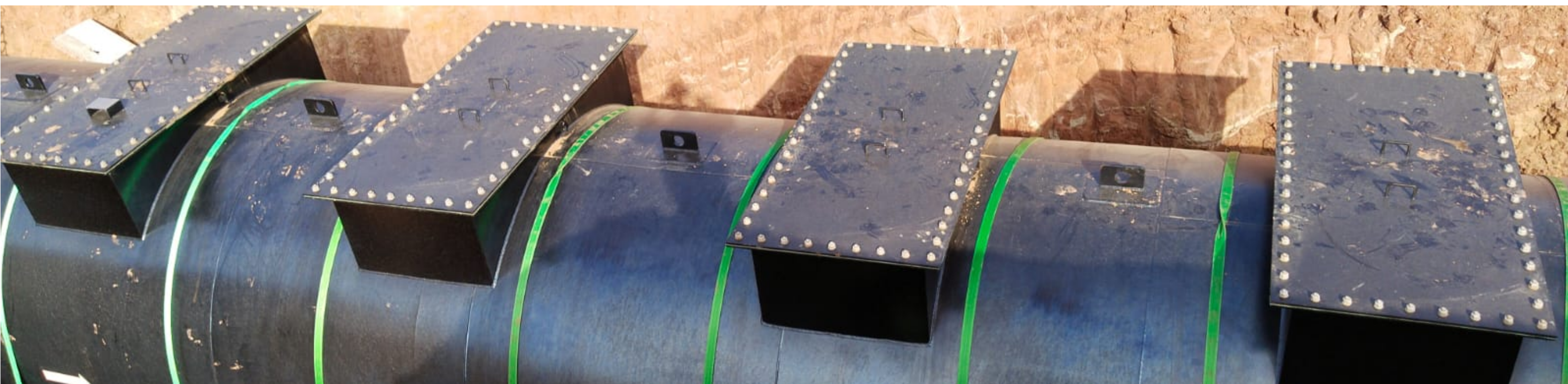
PARAMETER	PERFORMANCE BPOWS+ MODEL
EN 858 1/2	✓
Class I (Oil < 5 ppm)	✓
Stokes' Law	✓
ASTM D-4201	✓
UL 1316	✓
API 421	✓
USCG 46CFR 162.050	✓
UL 2215 - Oil Separators	✓
Intermittent Flow	✓
Continuous Flow	✓

BPOWS+ Bypass Oil/ Water Separators are unparalleled in performance, structural strength, product compatibility, and corrosion resistance. With hundreds of high-performance separators in commercial operation throughout the world, Our patented oil/ water separators have a proven record of reliability.

BPOWS+ Bypass Oil/ Water Separators handle a wide range of oily discharges from paved surfaces at petroleum, industrial, military, commercial, and municipal facilities. Most common applications include facilities with vehicle fueling, repair/ maintenance areas and wash pads. **BPOWS+** Oil/ Water Separators come in a variety of capacities and designs, available in either a cylindrical or rectangular vessel. Single and double-wall construction is available for both underground and aboveground applications.

Our engineers have designed a functional means of primary separation that not only meets the international and national oil and grease discharge limitation requirements, but also surpasses them. And unlike other oil/ water separators, Our separators are easy to operate and maintain!

Each Oil/ Water separator is backed by our tank's professional design, engineering, fabrication, delivery and service. **BPOWS+** separators come directly from UIHT's manufacturing facilities. This practice ensures complete quality control, from expert design to timely delivery by our experienced drivers. Construction and performance certification of the separator in strict accordance with Underwriters' Laboratories Subject SU-2215 is also available.



BPOWS+ Oil/ Water Separators are competitively priced and are readily available from a network of knowledgeable regional factory representatives and distributors. In addition, we provide a wide array of support information, including an engineering manual with detailed information, specifications, and engineering drawings for selecting and specifying oil/water separators and accessories. You can depend on us to provide you with environmentally safe and

structurally sound oil water separator solutions well into the 21st century and beyond.

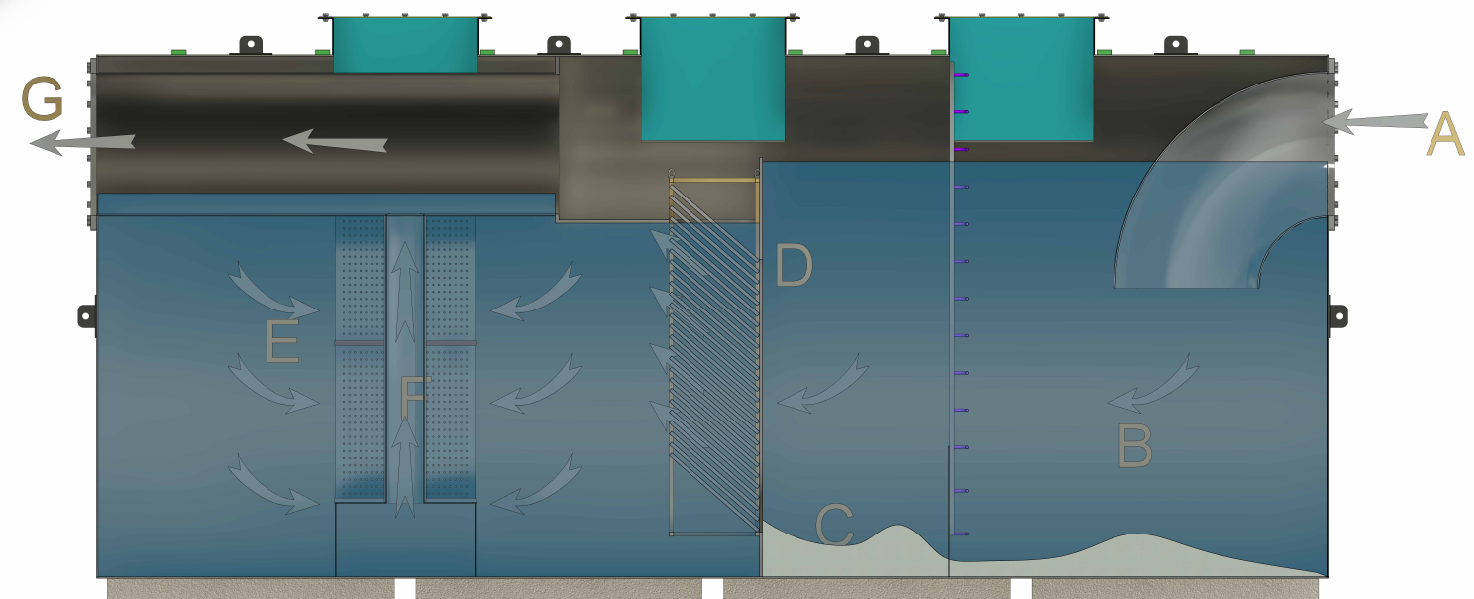
In addition, all protected **BPOWS+** Oil/ Water Separators carry a 30-year limited warranty against corrosion and structural failure.

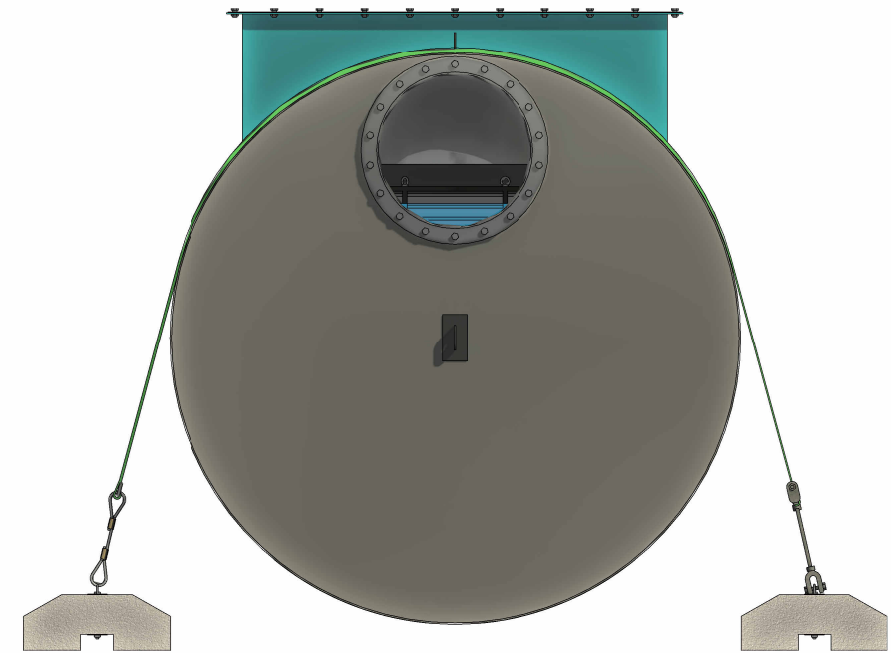
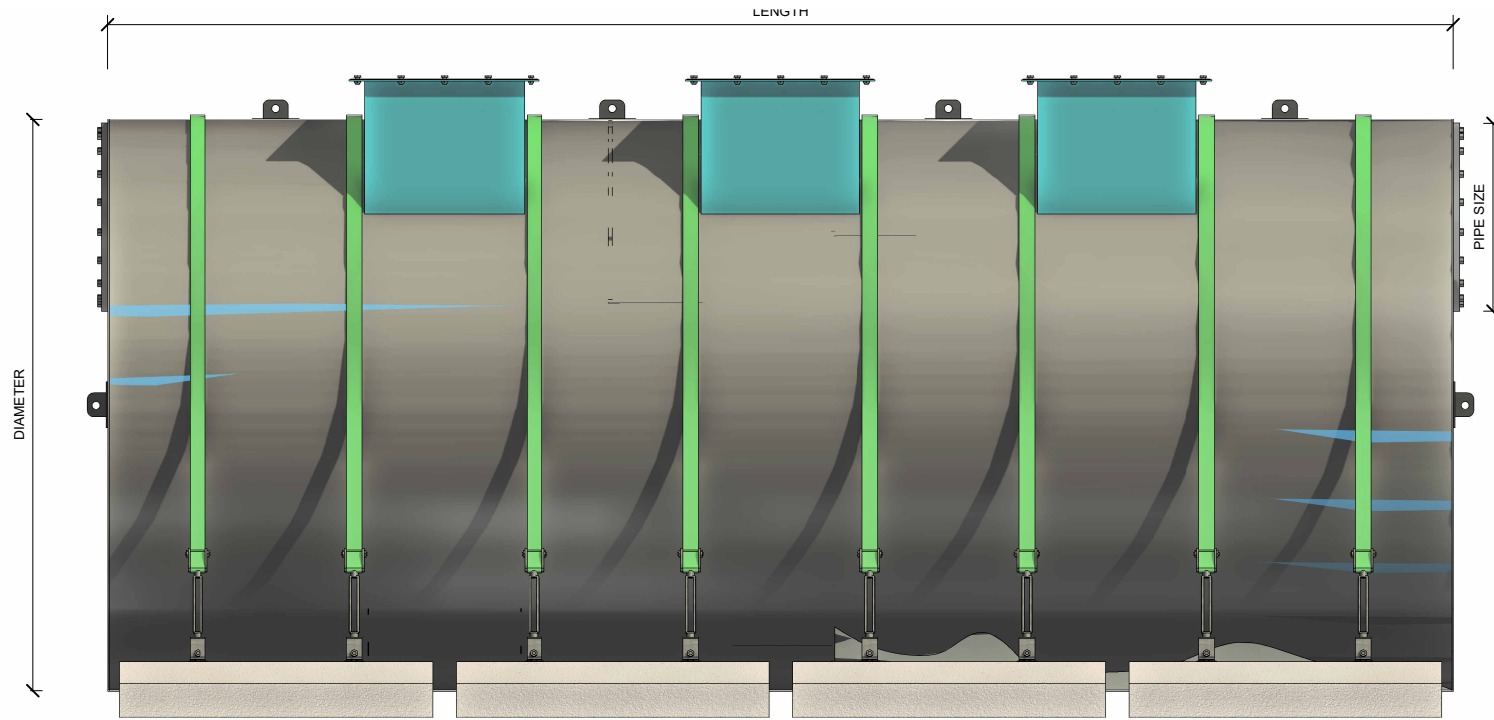
From the solid heavyweight construction to the patented design and operating simplicity, a **BPOWS+** Oil/ Water Separator is a product of experience, backed by a company with 15+ years of private ownership and management.



Additional Features:

- Oil and Hydrocarbon Detection Alarm.
- Oil maximum level alarm.
- Maximum Solids level alarm to avoid clogging.
- Mechanical skimmer for separated oil removal.





MODEL	Nominal Size (NSB) Flow (l/s)	Nominal Flow Rate (M3/hr)	Peak Flow Rate (M3/hr)	Oil Storage (Liters) NSBx15	Silt Storage (Liters) NSBx100	Diameter (mm)	Length (mm)	Volume (m3)	Inlet/Outlet (DN)
BPOWS-100	100	360	3,600	1,500	10,000	3,650	7,000	73	900
BPOWS-150	150	540	5,400	2,250	15,000	3,650	7,800	82	900
BPOWS-200	200	720	7,200	3,000	20,000	3,650	8,600	90	1000
BPOWS-250	250	900	9,000	3,750	25,000	3,650	10,100	106	1000
BPOWS-300	300	1,080	10,800	4,500	30,000	3,650	11,500	120	1000
BPOWS-350	350	1,260	12,600	5,250	35,000	3,650	12,200	128	1000
BPOWS-400	400	1,440	14,400	6,000	40,000	3,650	12,800	134	1000
BPOWS-500	500	1,800	18,000	7,500	50,000	3,650	13,200	138	1200
BPOWS-600	600	2,160	21,600	9,000	60,000	3,650	13,900	145	1200
BPOWS-700	700	2,520	25,200	10,500	70,000	3,650	14,300	150	1200
BPOWS-750	750	2,700	27,000	11,250	75,000	3,650	14,900	156	1200
BPOWS-800	800	2,880	28,800	12,000	80,000	3,650	15,500	162	1200

PERFORMANCE ADVANTAGES

- Consistently removes large quantities of non-emulsified organic contaminants to non-detectable levels or levels meeting regulatory codes.
- Especially effective in removing oil and grease, total petroleum hydrocarbons, and dissolved hydrocarbons.
- Eliminates or reduces waste volume, mobility and toxicity.
- Uses no anthracite coal fillers
- Enhanced coalescer system is comprised of oleophilic plates to maximize separation and minimize maintenance.
- Removable plates simplifies routine cleaning.
- Removes free floating oils and settleable solids for oil/ water mixtures to achieve 5 ppm effluent quality
- Includes a 30-year internal/ external corrosion and structural warranty.

SEPARATOR DESIGN & SIZING

Since each site is unique, the most effective approach is to analyze each situation and design the system accordingly. Our engineering staff can help determine the best fit for your technical considerations and site specific needs:

- Inlet flow rates
- Inlet/ Outlet Concentration
- Effluent Quality
- Specific Gravity of Contaminants

BPOWS+ separators are sized primarily on flow rates. A complete list of flow rate plate pack options are available. Contact your our representative for more information.

INTERCEPTORS

BPOWS+ Oil/ Water Separators are used specifically for the removal of free floating oil, grease, and settleable oily coated solids from oil/ water discharges associated with many types of industrial facilities. Designed to remove oils with a specific gravity less than 0.95, high performance separators from 2,000 ppm oil/ grease discharge (**BPOWS+**) down to 5 ppm.

APPLICATION

Oil drippings and spills from parking lots, driveways, oil terminals, airplane aprons, runways, and other vehicular traffic surfaces are being washed into our water supplies by rainwater, creating serious environmental concerns.

BPOWS+ Oil/ Water Separators are designed to meet EPA and local Saudi Arabian guidelines for rainwater runoff control.

ELECTRONICS

Oil/ Water Separator monitoring and control systems can be configured to satisfy a wide range of customer requirements. Control panels, sensors, probes and gauges are available for double-wall and single-wall oil/water separator systems as well as for single-tank or multiple-tank installations. We carry a full line of pump controls, inlet and outlet pumps, and waste oil pumps. We can package the right model with the proper electronics so when the tank arrives the only thing left to do is connect the piping.



OPTIONAL FEATURES

- Single-wall, Double-Wall Separator
- Manway Extension
- Tank Sump
- Cross-Flow Baffle
- Coalescer Plate Packs
- Oil Stop Valve
- Anchor Straps
- Deadman Anchor System

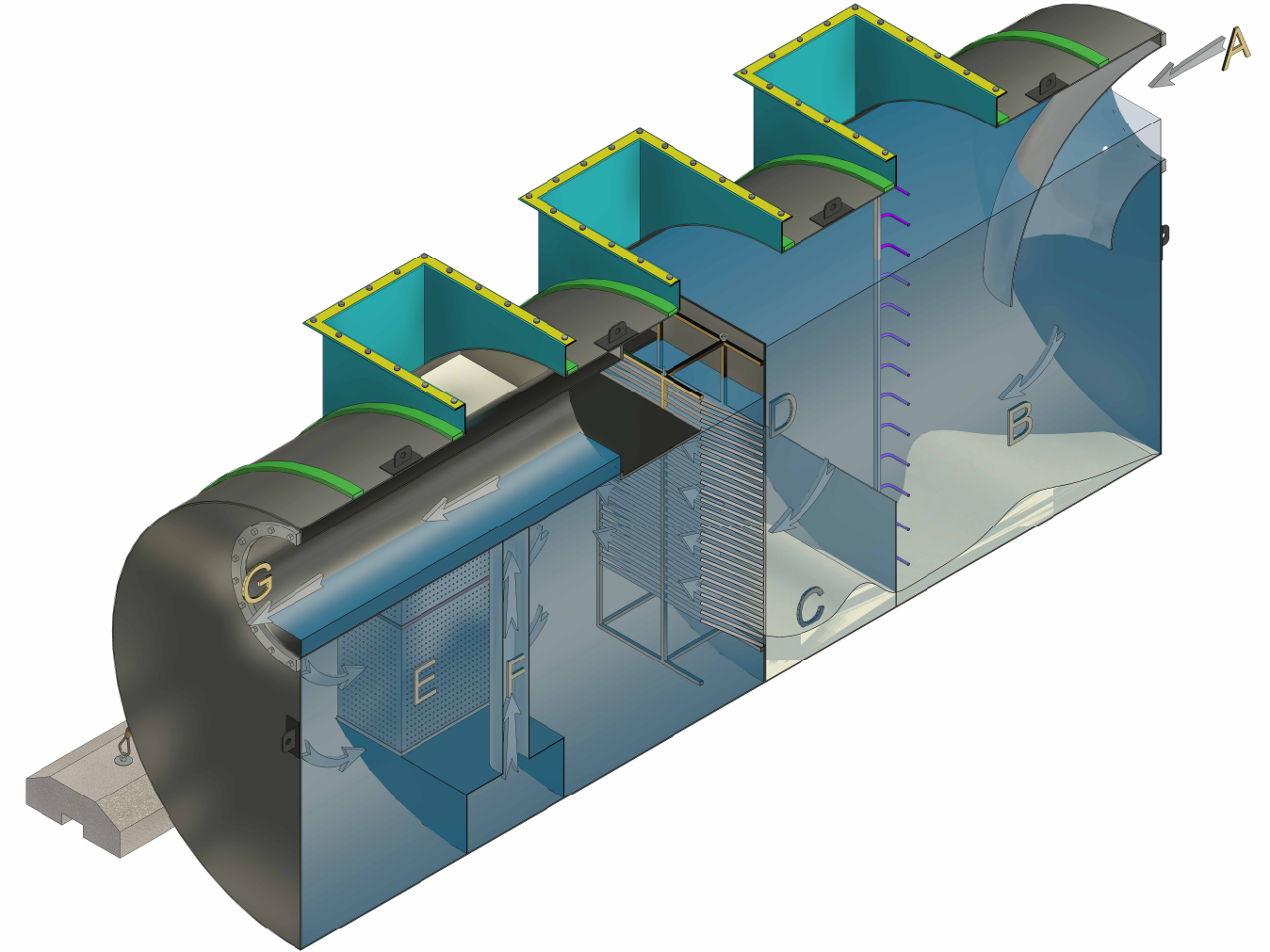
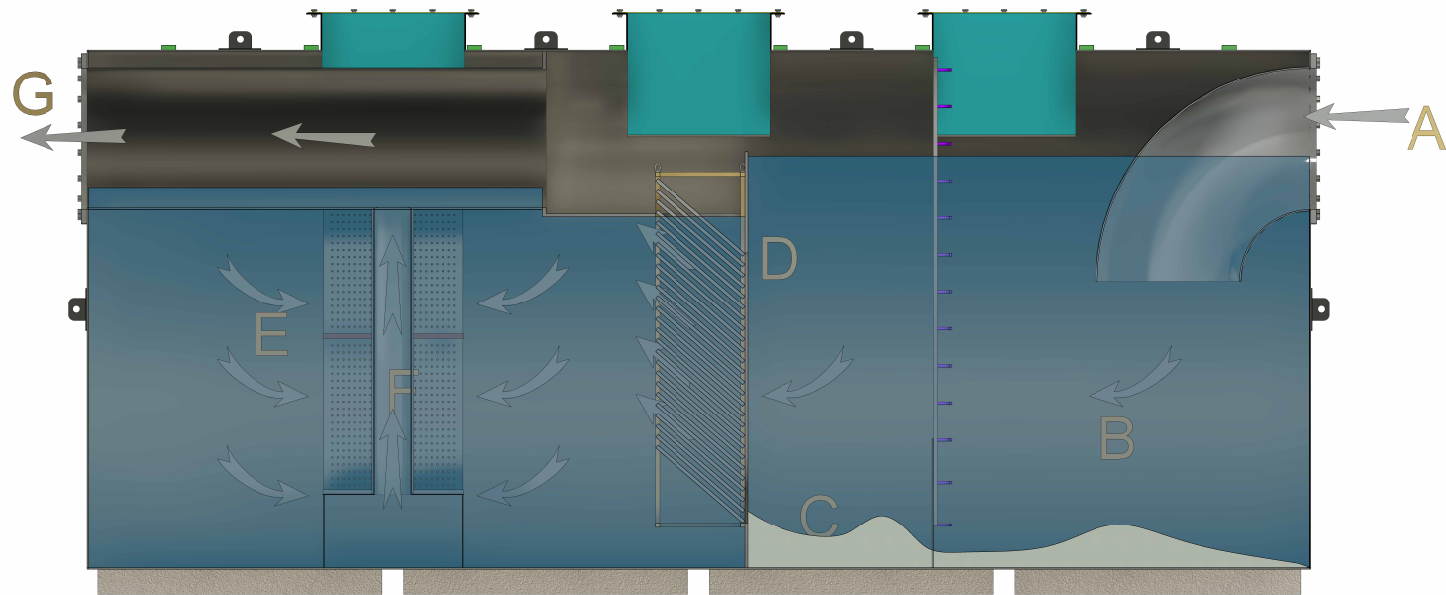
The unique cross flow design of the UWS-PLUS model results in the most efficient use of the corrugated plate pack.

PLATE COALESCER
HIGH PERFORMANCE

PLATE COALESCER

This type of equipment uses gravity separation similar to the skim vessels, but in addition it promotes the coalescence of oil droplets. Bigger droplets flow faster to the phase interface. These devices resemble skim vessels retrofitted with the plate interceptors. Corrugated Plate Interceptors (CPI) and cross-flow devices are the most effective plate coalescer that are able to separate oil droplets down to sizes of 30-50 μm . The main difference between CPI and cross-flow devices is that the plate axes of the corrugations are parallel to the direction of flow in CPI and are perpendicular in the cross-flow devices.

BPOWS+ SYSTEM PROCESS



Diffusion Baffle (B)

- The water flow inside the vessel through pipe (A). The velocity head diffusion baffle (B), located near the inlet of the separator, is designed to serve four basic functions:
 - To dissipate the velocity head, thereby improving the overall hydraulic characteristics of the separator.
 - To direct incoming flow downward and outward maximizing the use of the separator volume.
 - To reduce flow turbulence and to distribute the flow evenly over the separator's cross-sectional area.
 - To isolate inlet turbulence from the rest of the separator.

Monitoring Systems

Gravity displacement discharges the effluent through the outlet at a lower point in the tank chamber. Separator systems can also be equipped with electronic monitoring with high oil level alarms, oil stop valve, and control panel. For easy and efficient operation and maintenance, an oil level sensor can sound an alarm at high oil levels so waste oil can be removed from the separator. Double-wall separators can be furnished with a leak detection system for the interstitial space. Additional monitoring equipment is available for oil or water level sensing, alarm and pump-out control.

Internal Chambers

In the sediment chamber (C), heavy solids settle out, and concentrated oil slugs rise to the surface. As the oily water passes through the parallel corrugated plate coalescer (D) (an inclined arrangement of parallel corrugated plates) the oil rises and coalesces into sheets on the underside of each plate. The oil then creeps up the plate surface, and breaks loose at the top in the form of large globules. These globules then rise rapidly to the surface of the separation chamber where the separated oil accumulates. The water with large oil globules, passes through the coalescent packing (E), where oil globules increases further in size and rise to the surface. The configuration of the packs efficiently coalesces or joins oil droplets together forming larger masses of oil that rise to the surface where it accumulates and can be removed.

Water passes downward to the water collection chamber under the coalescent and rise through the upward pipe (F) to the outlet pipe (G), where it is discharged by gravity displacement from the lower regions of the separator.

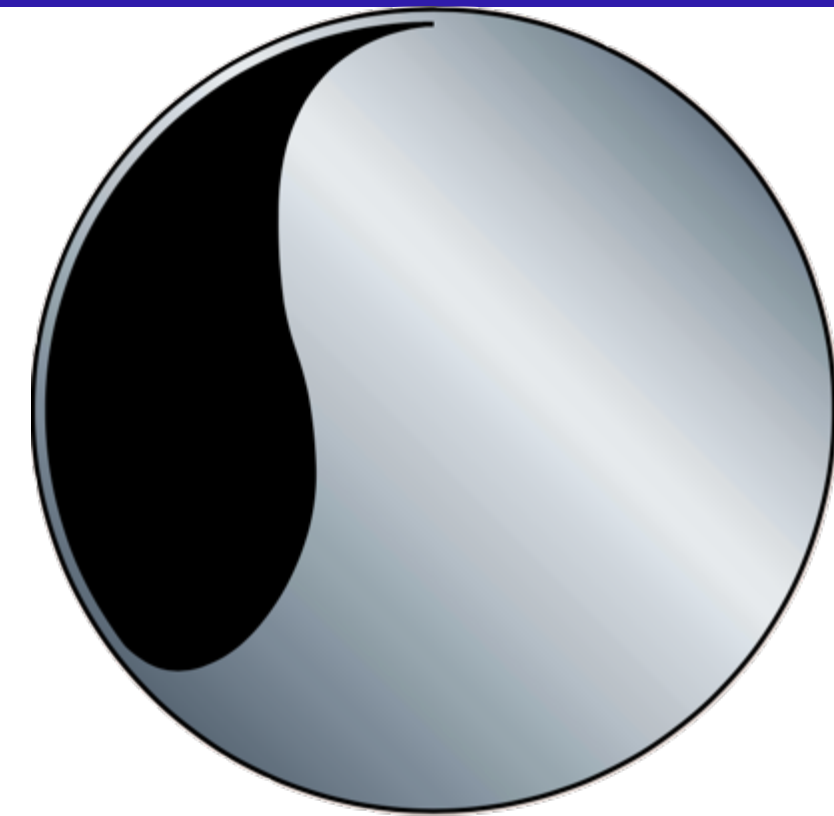
Storm Water Bypass

In case of peak flow, the water flow that exceeds the nominal flow jumps over the corrugated baffle to the outlet pipe. The water does not come in contact with the oil layer collected already in the coalescent chamber.

VESSEL CONSTRUCTION

Single-wall

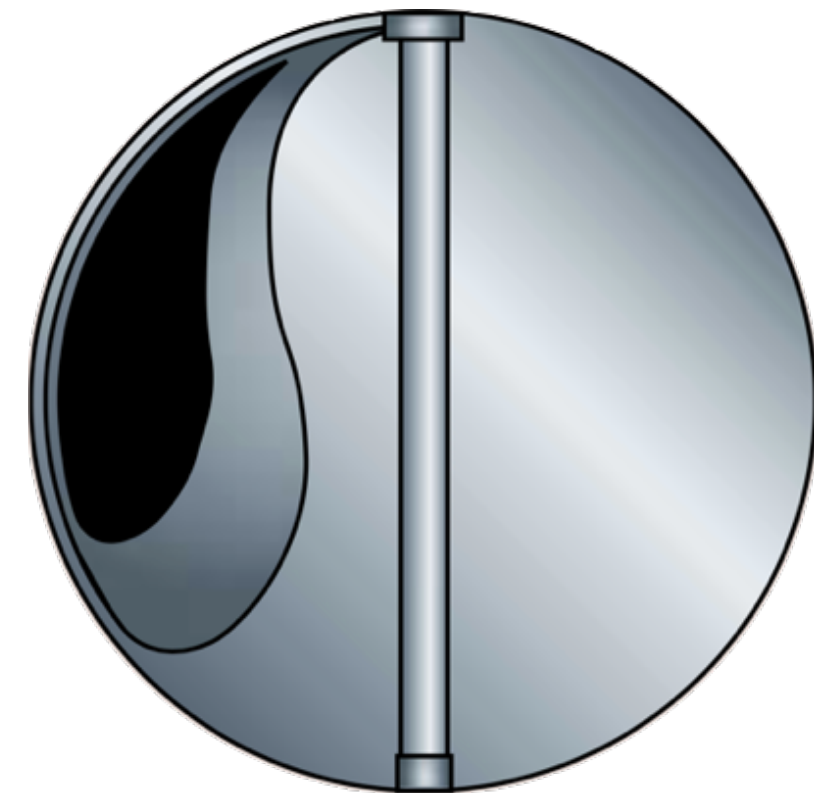
Standard single-wall vessels are constructed of mild carbon or stainless steel meeting ASTM specifications. Material thicknesses from 5 mm to 12 mm can be specified. Superior “ribbed” strength is achieved with continuous exterior full-fillet lap welds, employing a minimum 12 mm overlap on both head and shell joints. All separators and interceptors are factory air tested for leaks at 5 psi.



Single-wall

Double-wall

Double-wall vessels are constructed by wrapping a secondary steel wall completely around the primary vessel. Each double-wall vessel is constructed employing the same basic fabrication techniques as are used on single-wall vessels. The area between the vessel walls, known as the interstice, can be monitored with a leak detection system installed in the monitor tube, located on the vessel head.



Double-wall

ACCESSORIES FOR OIL/ WATER SEPARATORS

Manufacturing

Standard 24", 30" and 36" diameter manways permit access to the inside of the vessel for maintenance from above. Double bolt ring manways for secondary containment sumps and custom, large rectangular access chambers to allow for total unconfined, unrestricted access from above, are also available.

Forming Heads: Sheet steel is cut with a rotary shear and flanged to form tank head.

Rolling Steel: Steel plates from 5 mm to 12 mm are rolled to form the rigid shell of the vessel

Fitting Components: Flanged and threaded fittings, and other special components are fitted to the vessel, then welded in place.

Welding: All separators are sealed with a continuous exterior full-fillet lap weld.

Coating: Polyurethane, fiberglass reinforced polyester or other high-grade coatings are applied based on the separator's end use.

Testing: All separators are air tested for leaks at 5 psi. All seams are inspected to ensure weld integrity.

Electrical Isolation: UL-Listed dielectric nylon bushings or flange isolation kits are used in each opening to electrically isolate the separator from piping, preventing the entry of stray currents or galvanic action through piping connections.

Protective Coating: A tough, heavy duty dielectric coating of polyurethane covers the separator and seals it from the surrounding soil providing the first line of defense against stray current and galvanic corrosion.

ACCESSORIES FOR OIL/ WATER SEPARATORS

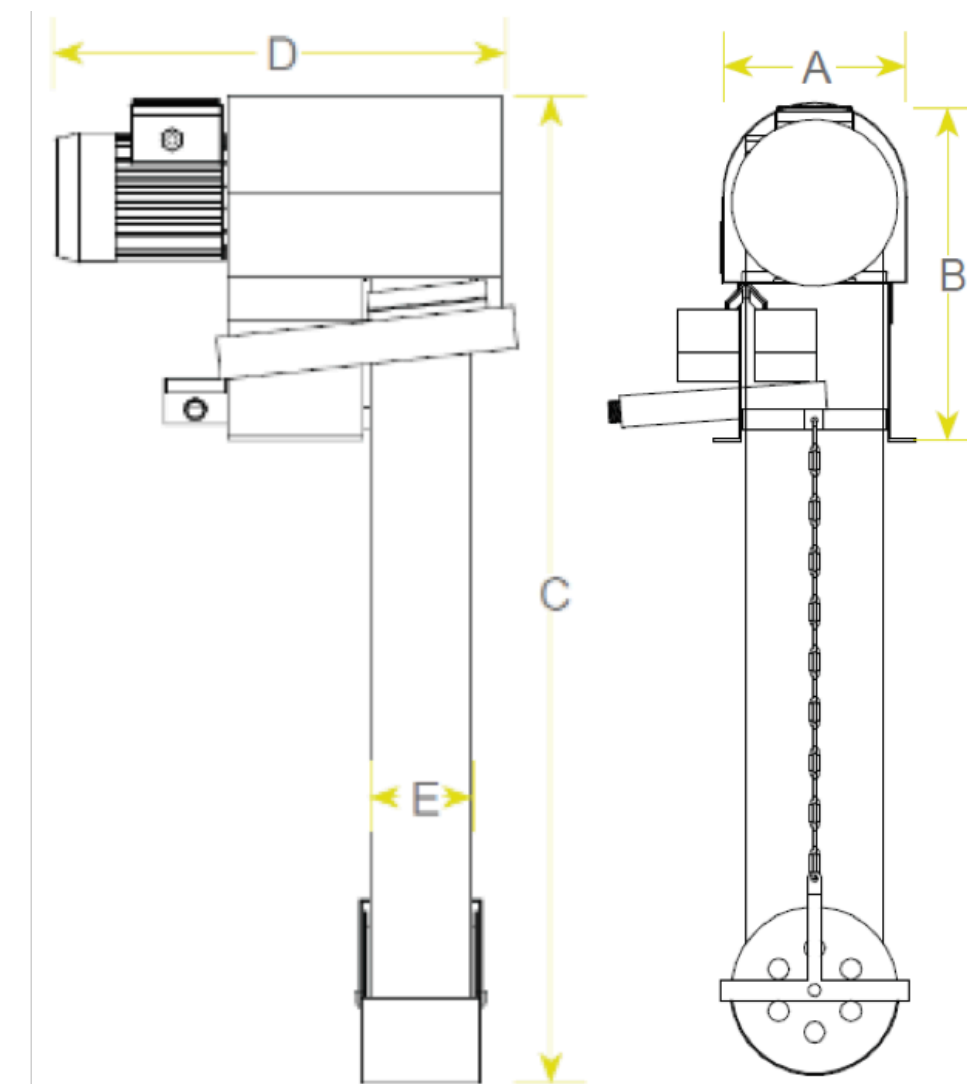
MECHANICAL SKIMMER

Function

Collection of mineral oil and hydrocarbon present in water or aqueous solutions.

Characteristics

- Equipment manufactured in AISI 304 stainless steel.
- Oil belt designed for extreme conditions.
- Steel safety chain to prevent the loss of the skimmer if the belt breaks.
- Anti-splash protection in AISI 304 stainless steel.
- Can be used as a pretreatment, before the filtration or combined with a coalescing system.
- Compact, robust and handy.
- Programmer and explosion protection in option.
- Skimmer with explosion-proof protection ATEX in option.



REFERENCE	A [MM]	B [MM]	C [MM]	D [MM]	E [MM]	FLOW [L/H]
SKM-100	176	320	--	420	100	50
SKM-150	176	320	--	470	150	76
SKM-200	176	320	--	520	200	100

ACCESSORIES FOR OIL/ WATER SEPARATORS

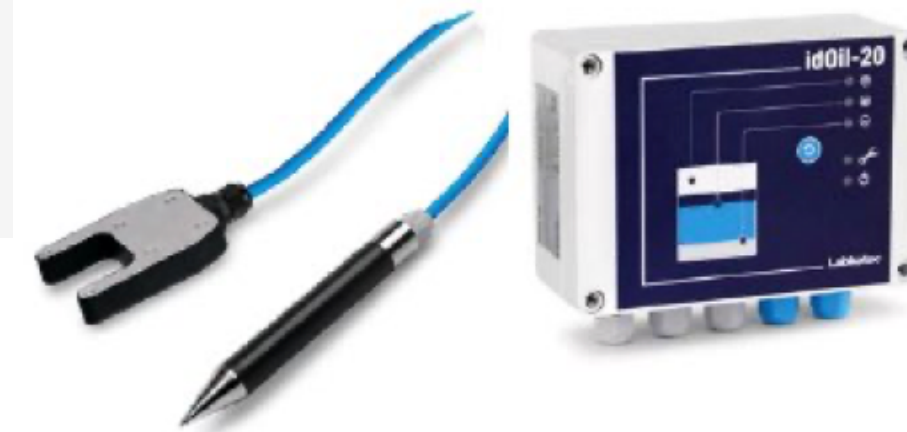
HYDROCARBON LEVEL DETECTION ALARM

- Equipment of level detection of hydrocarbon, oil and grease to install in grease and oil/ water separators with working temperatures (-20 to 50°C).



HYDROCARBON, SAND AND SOLIDS DETECTION ALARM

- Combined alarm system for oil, hydrocarbon, sand and solids.



HYDROCARBON, SAND AND SOLIDS DETECTION ALARM

- Detection of maximum level of oil and hydrocarbon on the water surface. To be installed in civil construction tanks or open top tanks.
- The probe is placed on three floats and detects an hydrocarbon layer up to 15 mm thick.



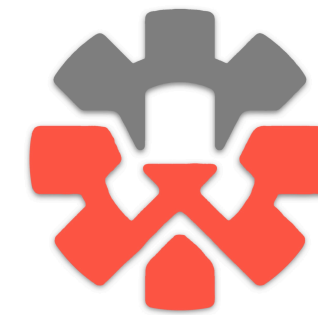


SAMPLE PROJECT:

- PROJECT: AMAALA AIR PORT FIELD
- CAPACITY: 5000 GPM Normal Flow



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