Pan America Environmental, Inc.

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ENGINEERING SPECIFICATION

API Series Above Grade Steel Oil/Water Separator

Engineering Specification

MODEL RANGE	GET A QUOTE	SPEAK TO AN ENGINEER
API-5 through API-600	technical@panamenv.com	262.716.0105

PRODUCT PAGE

https://www.panamenv.com/oil-water-separators/api/

SECTION 1.0 OIL WATER SEPARATOR

Performance

The Pan America Environmental API Series gravity Oil/Water Separators are designed to produce an effluent concentration of 100 mg/l or less of oil droplets 150 micron and larger of non-emulsified, free and dispersed oils. High solids applications will also benefit from use of an API ows.

Solids removal:

In general solids with a settling rate equal to or greater than the oil rise rate will be removed within the API tank designed for this application.

1.01 Design

The oil/water separator will be designed and fabricated per the following specifications. Rectangular, flat bottom tank with features as described designed per API #421 Design & Operation of Oil/Water Separators Manual, February 1990. The above grade API oil water separator is an above ground design.

1.02 Influent Chamber

Influent flow enters the clog proof influent diffuser pipe and is immediately spread-out across the depth and width of the chamber. Any readily settlable solids drop to the bottom of the separation chamber.

1.03 Influent Diffuser

The influent diffuser design will provide immediate flow velocity and turbulence reduction and flow redirection into the influent chamber cross-sectional area.

1.04 Oil Water Separation Chamber

The separation chamber is to be designed to create a quiescent zone and ideal environment for the oil droplet rise and solids particle settling per the API 421 calculations.

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1.05 Oil Skimmer and Reservoir

The separator shall be provided with a fixed oil skimming weir integrated with an oil reservoir. The oil skimmer is to be located at the effluent end of the separation chamber. An oil outlet is located on tank exterior.

1.06 Clean Water Effluent Chamber

The cleansed water will flow under the oil retention baffle, over the adjustable water weir and into the effluent chamber. The water weir height determines operating and static water level in the separation chamber.

1.07 Water Weir Plate

A water weir plate is provided located on the water baffle. The weir plate is vertically adjustable.

1.08 Separator Cover

The separator is to have a multi-section cover that provides complete closure of the tank. The separator cover will be mounted to the tank via zinc plate hardware and vapor sealed with an industrial grade closed cell, compressible polyethylene gasket.

1.09 Skid & Lifting Lugs

The tank shall be provided with an integral, steel skid base with anchor bolt holes (hardware by others). Lifting lugs shall be provided.

1.10 Vents

Two (2) vent fittings are provided and will be 3” flanged located on tank walls with diagonal location.

1.11 Fittings

All fittings to be 150# RF ANSI B16.5 flange. Fittings smaller than 3” are to be FNPT coupling.

SECTION 2.0 ITEMS PROVIDED

2.01 Engineering Provided

- Tank design and review of application

2.02 Approval Package

- See section 5.0

2.03 Spare Parts

Spare parts to be provided:

- Cover gasket, 100% replacement
- Internal/external touchup coating, (1) gallon each
- 10% replacement spares of nuts, bolts & washers provided

2.04 Shipping Preparation

The following are provided:

- The API tank will be shrink wrapped with a heavy-duty plastic material for ocean freight.
- Any separated/detached components and/or options will be export crated.
- Flanged connections are to be coated with a corrosion resistant, easily removed material and covered with a protective cover such as wood. FNPT fittings will be plugged.

2.05 Manufacturer

The manufacturer of preference shall be: Pan America Environmental, Inc.

2.06 Warranty

Pan America Environmental warrants its products to be free of defect in materials and workmanship for a period of one year from the date of shipment.

SECTION 3.0 MATERIALS OF CONSTRUCTION

3.01 Steel Construction

Tank shell, baffles and external structural members shall be constructed of ¼" thick ASTM A-36 carbon steel. Welded joints are double welded and dye penetrant tested. Legs to be structural shapes.

3.02 Water Weir Plate

Water weir plate to be 304 SS construction.

3.03 Surface Preparation

Interior surfaces shall be prepared to an SSPC-SP10 near white metal blast. Exterior surfaces shall be prepared to an SSPC-SP6 commercial blast.

3.04 Coatings

Interior coating shall be coated with Ameron High Build Coal Tar Epoxy Amercoat 78HB (18-22 mils DFT). Exterior coating shall be coated with Ameron epoxy primer, Amerlock 2, (5-8 mils DFT). Final coat to be Ameron Amershield Aliphatic Polyurethane Enamel coat (5 mils DFT). Surface color to be Green RT-2203.

3.05 Piping

Internal piping shall be ASTM, A-106 steel.

3.06 Fasteners

All wetted fasteners to be 300 series stainless steel. All non-wetted fasteners to be zinc plated.

3.07 Coalescing Media (OPTIONAL, WHEN PROVIDED)

Cross-corrugated, oleophilic Flopak, PVC coalescing media shall be provided as manufactured by Pan America Environmental. Media pack frame(s) to be 304 stainless steel.

3.08 Cover Gasketing

Closed cell, industrial grade polyethylene constructed vapor sealed cover gasketing shall be provided. No neoprene shall be permitted.

SECTION 4.0 OPTIONAL FEATURES

4.01 Oil Water Separation Chamber (FLOPAK OPTIONAL, PROVIDED WHEN QUOTED)

The separation chamber is to be packed with Flopak cross-corrugated coalescing media. The media pack will be designed to create a quiescent zone, a laminar flow pattern to facilitate the impingement of oil on the media, and will provide numerous droplet impact sites and changes of flow direction. The media shall have a 60-degree corrugation angle. The media will be provided installed in 304 SS media pack frames with lifting lugs to facilitate convenient removal and replacement of the media.

4.02 Oil Drum Skimmer

An oil drum skimmer is provided per the following features:

- Stainless steel drum skimmer with axle shafts spanning tank width installed on bearings located on either side of tank
- Adjustable oil scraper blade mounted on oil reservoir scraper blade baffle
- Gearmotor drive assembly with inverter duty TEFC motor coupled to the drum drive shaft
- On/off controls with programmable VFD and speed pot on MCP door

4.03 Vapor Scrubber

To remove VOCs from the API tank vapor space one (1) VOCs Control Carbon Canister package unit, which includes a complete, skid-mounted system consisting of two (2) carbon canister drums, pre-filled with granulated activated carbon (GAC), and all internals, nozzles, lifting lugs, piping and pipe fittings, pipe supports, valves, pressure relief valves.

Spare, 100% refill GAC media will be provided.

4.04 Sludge Hopper

A sludge hopper is located under the separation chamber the entire length of the tank to provide temporary storage of any settleable solids. A full length sludge auger is provided to convey sludge to the sludge outlet. Hopper design is parallel to tank length and provides 45° hopper sidewalls.

4.05 Sludge Auger System

The solids hopper is provided with a rotating, screw type sludge auger. The auger consists of stainless steel shafts with coated steel screw auger driven by a slow speed gear motor drive assembly. The auger extends the full length of the solids hopper and conveys solids to the sludge outlet.

4.06 Excluded Items

The following are excluded:

- Foundation calculations
- Foundations and anchor bolts
- Civil works

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- Installation
- Any items not included in this quotation

4.07 Field Technician

A Field Technician can be provided ask for a quote, per Diem is $1250.00 + expenses.

SECTION 5.0 SUBMITTAL PACKAGE

5.01 Submittal Approval Package

Upon receiving an order Pan America Environmental will engineer and produce a Submittal Approval Package, which allows you the customer to review and change or keep aspects of the system detailed in this quote. The submittal package provides the following at a minimum:

- General arrangement drawings, 2D, 3D, plan, end, sectional, detail and other views
- Hydraulic profile
- Component datasheets
- Component cutsheets

Options

- P&ID
- Structural, seismic, wind load, lifting lug review, anchorage and/or other PE review calculations
- Design sizing PE calculations and/or calculations of any other types
- Testing review and implementation during fabrication and assembly, i.e. NDT, NDE, radiographic, x-ray, ultrasonic, magnetic particle exam, others
- Piping testing per desired standards, i.e. ASME B31.1 power piping, ASME B31.3 process piping
- Rigging and lifting guide, drawings and/or procedures and methods
- WPS, ITP, PQR, PMI, others
- Document, QC report and/or other project document binder
- Mill certificates

Revisions & Meetings

The submittal package contains a limited amount of engineering and provides a maximum of Two (2) revisions of up to 10% maximum each. This quote does not include open ended, extensive or continuous revisions until approval is given. This submittal package does not include: Iterative R&D and review projects, design/redesign projects, pre-submittal before or after order placement to attain approval from the end user before order is placed, honored or executed by Buyer, engineers/consultants, contractors and/or other parties involved with this project. In addition, numerous and/or excessive meetings relative to the system design and complexity are not provided as PAE strives to have all valuable communications in writing so as to create a trackable/traceable project evolution.

Engineering Only

The quotation provides a limited amount of engineering and does not provide “Engineering Only”. The limited engineering is part of the system cost and is provided to give direction and final understanding as to what is being provided to you in the system design. The quoted and submitted system is a proprietary PAE product and PAE will not produce drawings for you to build, license, bid out or produce and/or market as your product for your or any other entities use.

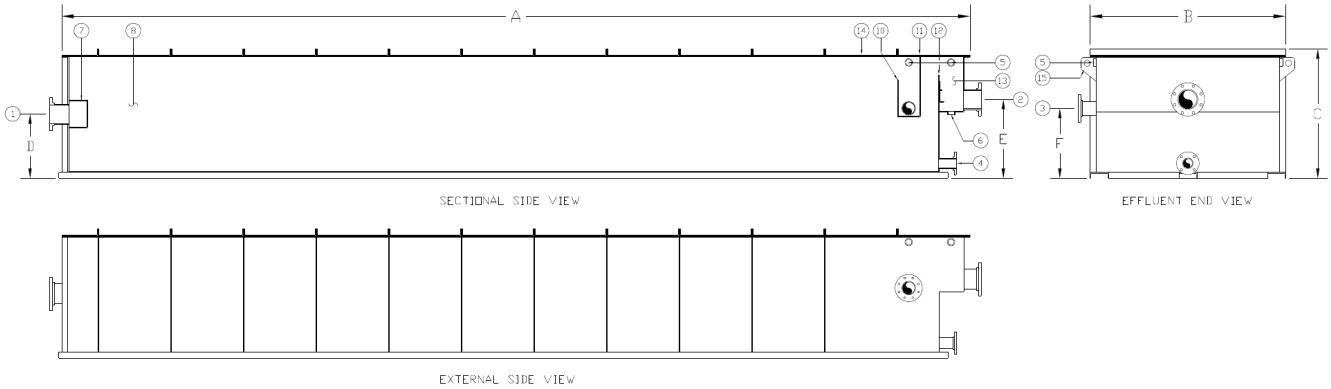
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API Example with options:

- Surface drag skimmer
- V-hopper
- Sludge auger
- Walkway

API Reference Drawing



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Model	Length	Width	Height	Inlet	Outlet	Oil Outlet	Oil Vol.	Inlet Size	Outlet Size	Drain Size	Oil Outlet Size	Empty Weight	Oper. Weight	GPM		
	A	B	C	D	E	F	Gals.					LBS	LBS	.85 SG	.90 SG	.95 SG
API-15	13’-8”	3’-4”	2’-7”	1’-2”	1’-1”	1’-0”	15	3”	3”	2”	2”	2417	5912	50	25	15
API-25	17’-2"	3’-10”	2’-9”	1’-2"	1’-1"	1’-0"	15	4”	4”	2”	3”	3375	9423	75	50	25
API-50	26’-6"	4’-8”	3’	1’-2"	1’-3"	1’-7"	17	6”	6”	3”	3”	5775	18544	150	100	50
API-75	22’-9”	5’-8”	3’-7”	1’-5"	1’-8"	2’-1"	22	6”	6”	3”	3”	8400	32605	225	150	75
API-100	33’-6”	6’-8”	4’-1”	1'-10"	2’-2"	2’-7"	26	6”	6”	3”	3”	10,182	46,526	300	200	100
API-150	37’-1"	8’-9”	4’-3”	2’	2’-4”	2’-9”	25	6”	6”	4”	4”	14,615	68,200	450	300	150
API-200	47’-6	8’-8”	4’-9”	2’-1"	2’-11"	3’-1"	35	8”	8”	4”	4”	18,913	100,663	600	400	200
API-250	55’-6"	9’-3”	5’-3”	2’-4”	2’-11”	3’-3”	40	8”	8”	4”	4”	24,000	145,000	750	500	250
API-300	56’	10’-8”	5’-3”	2’-4”	2’-11”	3’-1”	45	8”	8”	4”	4”	26,242	163,524	850	600	300
API-400	66’-9”	11’-8”	6’-3”	3’-4”	3’-11”	4’-1”	50	12”	12”	4”	4”	30,900	253,440	1100	800	400
API-500	70'-3"	12'-8"	6'-9"	3'-4"	3'-11"	4’-1”	65	12”	12”	4”	6”	35,000	342,000	1400	1000	500
API-600	77'-8"	14'-8"	7'-9"	4’-4”	4’-11”	5’-1”	75	12”	12”	4”	6”	41,000	476,861	1800	1100	600

SG= Specific Gravity *Dimensions, capacities for reference only and are not to be used for construction
*Model numbers represent nominal flow rates in GPM

Item	Qty	Description	Item	Qty	Description	Item	Qty	Description	Item	Qty	Description	Item	Qty	Description
1	1	Inlet	4	1	Drain	7	1	Inlet Diffuser	10	1	Oil Skimmer/Reserv	13	1	Effluent Chamber
2	1	Outlet	5	4	Vent 1" NPT	8	1	Influent Chamber	11	1	Oil Baffle	14	1	Cover
3	1	Oil Outlet	6	1	Drain 2" NPT	9	-	Flopak Media (option)	12	1	Water Weir			

Dissolved Air Flotation Systems

PD DAF link

https://www.panamenv.com/dissolved-air-flotation-daf/pdaf-plate-dissolved-air-flotation/

Slant Plate Lamella Clarifier Systems

SPC Clarifier Link

https://www.panamenv.com/clarifiers/spc-slant-plate-clarifier/

Specifying an API Series Above Grade Steel Oil/Water Separator for your project?

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