

Pan America Environmental
EC Series Emulsion Cracking System
Engineering Specification
SECTION 1.0 Emulsion Cracking System

Performance

The Pan America Environmental EC Series emulsion cracking 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 chemicals. Oil/water separation follows the cracking stage. Once oils are removed the pH is readjusted for final discharge. The systems are designed to produce an effluent with 10 mg/l of oil droplets 30 micron or larger.

1.01 Reaction Chamber

The reaction, emulsion-cracking chamber is provided with (1) 0-450 RPM, universal mount mixer with 316 stainless steel shaft and propeller. (2) Externally shelf mounted electronic chemical metering pumps with compatible diaphragms are provided for injection of acid/caustic and/or demulsifying chemicals. The automated pH adjustment process is controlled via an electronic pH controller with digital display. (1) 50-gallon chemical mix tank with 1/3 HP mixer is included for preparation of chemical demulsifier for injection in combination with acid or caustic.

1.02 Oil/Water Separation

Following the emulsion cracking stage the free product is passed through the oil/water separation stage for free product removal.

1.03 Influent Chamber

Influent flow enters the clog proof influent diffuser pipe and is immediately distributed across the depth and width of the separator influent chamber. Any readily settleable solids drop to the bottom of the solids accumulating V-hopper located directly below the Flopak coalescing media.

1.04 Oil/Water Separation Chamber

The separation chamber is to be packed with Flopak cross-fluted 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 impact sites and changes of flow direction. The media shall have a 60-degree cross-flute angle. The separation chamber will be design to prevent bypass or short-circuiting of the flow around, over or under the media.

1.05 Solids Accumulation Chamber

The separator shall have a V-shaped solids accumulation chamber located under the coalescing media. This chamber will provide temporary solids storage. The chamber walls are to be pitched at 45 degrees to assure simple and thorough solids removal. Dual outlet ports will be provided for sludge removal.

1.06 Clean Water Effluent Chamber

The cleansed water will flow under the oil retention baffle, over the water weir and into the effluent chamber. This chamber is to have the capability to be expanded at the factory by modifying the standard integral chamber so a greater volume of water is available for pump suction directly from the tank.

1.07 Oil Skimmer / Reservoir

A fixed weir oil skimmer with integral reservoir is to be provided for the temporary storage of separated oils. This chamber is located at the effluent end of the separator. The reservoir will have fittings for pump suction, high/low level switch accommodation and vent.

1.08 Separator Cover

The oil/water separator is to have a multi-piece 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 PVC gasket.

1.09 Fittings

All fittings are to be FNPT coupling up to 3". Fittings larger to be 150# FF ANSI B16.5 flange.

1.10 pH Post Adjustment Chamber

The final chemical reaction chamber is designed for the readjustment of pH to discharge requirements. The post adjustment chamber is provided with (1) 1750 RPM, universal mount mixer with 316 stainless steel shaft and propeller. (1) Externally shelf mounted electronic chemical metering pump with compatible diaphragm is provided for injection of acid/caustic. The automated pH adjustment process is controlled via an electronic pH controller with digital display. Customer to provide chemical drum for pump supply.

1.11 Control Panel

The system is supplied with a Nema 4-control panel installed on the EC tank. HOA and on/off switches are provided for mixer and pump control. The pH controllers are panel mounted. Motor run and power on lights are provided. 115/230V/1 or 3ph/60/50Hz power supply as project/site dictates. The system will be factory plumbed, wired and functionally tested prior to shipment.

Section 2.0 Materials of Construction

2.01 Steel Construction

Tank shell, baffles and external structural members shall be constructed of A-36 carbon steel. Welded joints are double welded and dye penetrant tested.

2.02 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.

2.03 Coatings

Interior coating shall be a self-priming, coal tar epoxy (12 DFT). Exterior coating shall be primer coat followed by industrial polyurethane enamel coat (6 DFT). Color is Rain Forest Green.

2.04 Piping

Internal piping shall be ASTM, A-53 steel.

2.05 Coalescing Media

Cross-fluted, oleophilic, PVC Flopak coalescing media shall be provided as manufactured by Pan America Environmental. Media shall be encased in 304 stainless steel media frame with lifting lugs (EC24 & larger)

2.06 Cover Gasket

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

2.07 Field Assistance

PAE can provide startup field assistance when desired or required.

2.08 Manufacturer

The manufacturer of preference shall be: Pan America Environmental
950 Rand Rd. Unit 120 Wauconda, IL 60084 USA

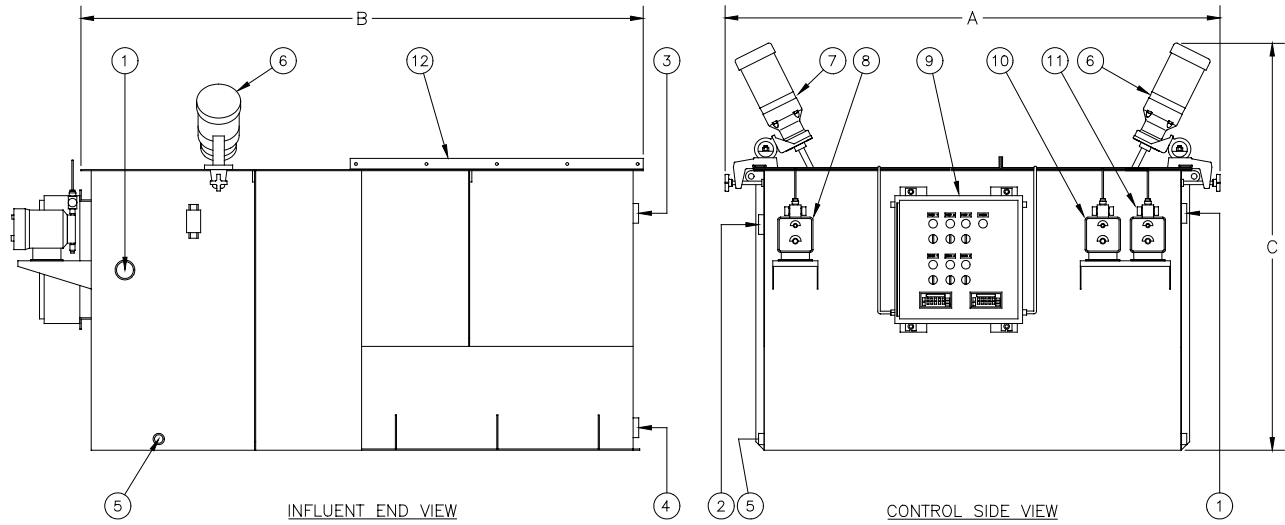
2.09 Warranty

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.

2.10 Manuals

(2) Installation & Operation Manual (IOM) manuals will be provided. Extras are available at additional cost.

EC Systems Drawing



MODEL	A	B	C	EMPTY WEIGHT	OPERATING WEIGHT	FLOW RATE (GPM)
EC-4	5'-11"	4'-4"	3'-6"	1700	3965	8
EC-8	5'-11"	4'-4"	4'-6"	2425	7900	16
EC-12	6'-7"	6'-4"	4'-6"	2910	9050	25
EC-16	6'-7"	8'-4"	5'-6"	3454	11562	35
EC-24	7'-10"	8'-2"	5'-6"	4800	17900	50
EC-36	8'-4"	8'-2"	6'-8"	6250	24500	70

ITEM	QTY	DESCRIPTION	ITEM	QTY	DESCRIPTION
1	1	INFLUENT INLET	7	1	ph MIXER
2	1	EFFLUENT OUTLET	8	1	pH METERING PUMP
3	1	OIL OUTLET	9	1	CONTROL PANEL
4	1	SLUDGE OUTLET	10	1	METERING PUMP
5	2	2" DRAIN	11	1	METERING PUMP
6	1	DEMULSIFIER MIXER	12	1	SEPARATOR COVER