Pan America Environmental, Inc.

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ENGINEERING SPECIFICATION

STAX Series Pipe Flocculator Systems

Engineering Specification

GET A QUOTE	SPEAK TO AN ENGINEER
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PRODUCT PAGE

https://www.panamenv.com/chemical-treatment/stax/

SECTION 1.0 STAX STATIC PIPE FLOCCULATOR SYSTEM

1.01 Design

The STAX flocculation tube will be designed and fabricated per the following specifications reflecting the flow rate and retention time of each chemical.

The Pan America Environmental STAX systems are a hydraulic inline flocculator type of design that provides multiple-chemical reaction contact in a compact footprint, low head loss design without moving parts, wearing components and no need for power. The STAX systems are used with dissolved-air-flotation systems, Inclined Plate clarifier, Lamella clarifiers and slant plate clarifiers. The STAX design uses water turbulence and shear induced by a spiral or serpentine piping network to mix chemical products into a wastestream. The design eliminates the need for mixing tanks, mixers and electrical consumption for the mixing process. The process takes place under highly controlled, well-defined and optimized conditions.

• 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.

- Corrosion resistant materials

  Designed for a particular flow range, each pipe flocculator can be configured with: • Multiple chemical injection ports for up to three stage treatment (coagulant, pH adjustment and flocculant).

- Custom retention timings can be provided

  • Centralized, valved chemical pump connection ports. • Multiple sample ports.

  • In-line monitoring probes (pH, suspended solids, conductivity). • Flanged and NPT connections.

  STAX plug flow flocculators come with an enamel coated, A36 carbon steel support frame as either a skid-mounted design for mobility/temporary use or for permanent installations. Unit sizes range from 1.5" to 12" pipe, and can be supplied in a variety of lengths and construction. Other diameters are available upon request. STAX flocculators can be customized and built to meet specific project requirements.

1.02 Piping Design and Construction

The piping system consists of the following pipe detail:

- Piping construction to be ASTM 1785 schedule 40 PVC /schedule 80 PVC. PVC primer and cement assembly is used.

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- Inlet/outlet flanging to be ANSI B16.5 150# flat or raised face Van Stone design.
- Injection ports: to be PVC or other construction bolt-on fitting design FNPT thread.
- Sample ports: to be PVC or other construction bolt-on fitting design FNPT thread.

1.03 Injection Ports

Chemicals are injected at strategic points within the pipe stack, each injection port is provided with the following:

- Isolation valve, (PVC or brass construction)
- Check valve
- Injection tubing from the injection valve to the injection fitting

This arrangement allows injection into the piping under pressure without backflow toward the metering pump and the ability to shut down flow to each injection port if desired for process or maintenance purposes.

1.04 Sample Ports

Two (2) sample ports are provided at strategic points within the pipe stack, each port is provided with a ½" isolation valve, (PVC or brass construction).

1.05 System Skid

The STAX system is provided mounted and attached to a forkliftable steel skid with the following design:

- Structural members shall be constructed of ASTM A-36 carbon steel.
- Exterior surfaces shall be prepared to an SSPC-SP6 commercial blast.
- 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 or a powder coat equivalent.
- Fork pockets are provided in skid base.
- Anchor holes for ½" fasteners minimum are provided for attachment to installation surface

1.06 Fasteners

All the fasteners and hardware attaching the system to the skid are to be zinc plate steel.

1.07 Manufacturer

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

1.08 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.

1.09 Field Technician

A Field Technician can be provided ask for a quote, per Diem is $1450.00 + expenses.

Applications

- wastewater treatment flocculator
- industrial wastewater flocculation
- water clarification pipe flocculator

- dissolved air flotation flocculator (DAF flocculator)
- sludge flocculation pipe
- coagulation and flocculation system
- chemical mixing flocculator pipe
- turbidity removal flocculator
- solids separation pipe flocculator

Features & Benefits

- energy-free flocculator
- non-mechanical flocculator
- static mixing flocculator
- low shear flocculator
- compact pipe flocculator
- plug flow reactor flocculation
- gentle mixing flocculator
- uniform flow distribution flocculator
- air injection flocculator pipe
- chemical injection ports flocculator

Specific Design

- pipe flocculator for wastewater treatment
- coagulation flocculation pipe system
- static pipe flocculator
- PVC pipe flocculator
- stainless steel pipe flocculator
- flocculation tubes wastewater
- serpentine pipe flocculator
- inline flocculator pipe
- pipe flocculator DAF
- flocculation pipe before DAF
- polymer mixing pipe flocculator
- chemical dosing pipe flocculator
- vertical tubular flocculator
- horizontal pipe flocculator

SECTION 2.0 CHEMICAL METERING SYSTEM

2.01 Chemical Treatment System Model CT-CpF

The two-stage, pretreatment system will provide wastestream coagulation and flocculation on a continuous basis with the following components:

- (3) Chemical metering pumps
- (1) Chemical makeup/storage tank
- pH controller & sensor

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- NEMA 4 controls

Chemical Metering Pumps

pH & Coagulant:	Two (2) pumps are provided. Pumps will be an electronic, solenoid driven or motor driven chemical metering pump. Each pump will be compatibility matched to the chemical being metered. All pumps will have frequency and stroke adjustment located on face of pump. One pump is provided for the pH adjustment stage to control pH in one direction.
Flocculant:	A polymer activation system is provided to create a flocculant solution on demand. The system will have aging cell, fresh water supply solenoid, dosing pump, water rotameter, water pressure switch and gauge, water strainer, local-off-remote switch control, loss-of-water interlock, local manual polymer feed override, 4-20mA pump controls for pacing to influent feed (influent feed pacing method not provided).
Makeup tank:	A coagulant makeup tank is provided and includes: 100-gallon polyethylene makeup/storage tank, mixer, manual on/off controls in MCP. Tank has 8” access hatch for inspection and adding liquid or dry coagulant, ¾” fresh water addition fitting with valve.

pH Instruments

pH Controller:	The wasteflow pH will be continuously monitored and chemical metering pump controlled by a microprocessor-based controller transmitter with tactile keyboard, large, bright, 5-character LED readout. Controller features shall include: switch selectable operation in pH units or mV, isolated 4-20 mA powered output, self configurable for manual temperature or ATC, dual relay outputs for alarms or control, adjustable or built-in deadband. pH range is to be 0-14 pH with a resolution of at least 0.01 pH. The controller shall be housed in the system MCP.
pH Probe:	The pH probe shall be a flat surfaced, sealed reference design. The probe will be detachable. Probe construction will be CPVC. The probe will be mounted to a quick remove/replace assembly to allow removal and replacement without tools. Probe to be wired to the controller via a wire lead or BNC style cable.

Master Control Panel (MCP)

The STAX Chemical metering system provided with this quotation will include controls that will be integrated into one, centralized local Master Control Panel (MCP). The MCP will provide the following controls:

- Chemical metering pump HOA control
- Flocculant activation system control
- Coagulant makeup tank on/off
- pH controller located in MCP for controlling pH pump
- Power disconnect transformer, circuit breakers are provided to accommodate a 3 phase input power.
- MCP power required: 230 or 460V/3pH/60Hz.
- Enclosure: NEMA 4, steel construction, ANSI 61 grey enamel coating.
- LED lights, metallic switches
- PLC based design
- Designed per UL508, NEC

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SECTION 3.0 SUBMITTAL PACKAGE

3.01 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
- Electrical schematics
- Control panel physical layout
- Process/control narrative
- 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
- Mill certificates

Revisions

The submittal package is provided with a maximum of Two (2) revisions of 10% maximum each. This quote does not include open ended, continuous revisions until approval is given. This submittal package does not allow: R&D review and design/redesign projects, pre-submittal before or after order placement to attain approval from the end user before order is placed or honored by Buyer, engineers/consultants and/or other parties involved with this project.

Engineering Only

The quotation does not provide “Engineering Only”. The 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 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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PD DAF link

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

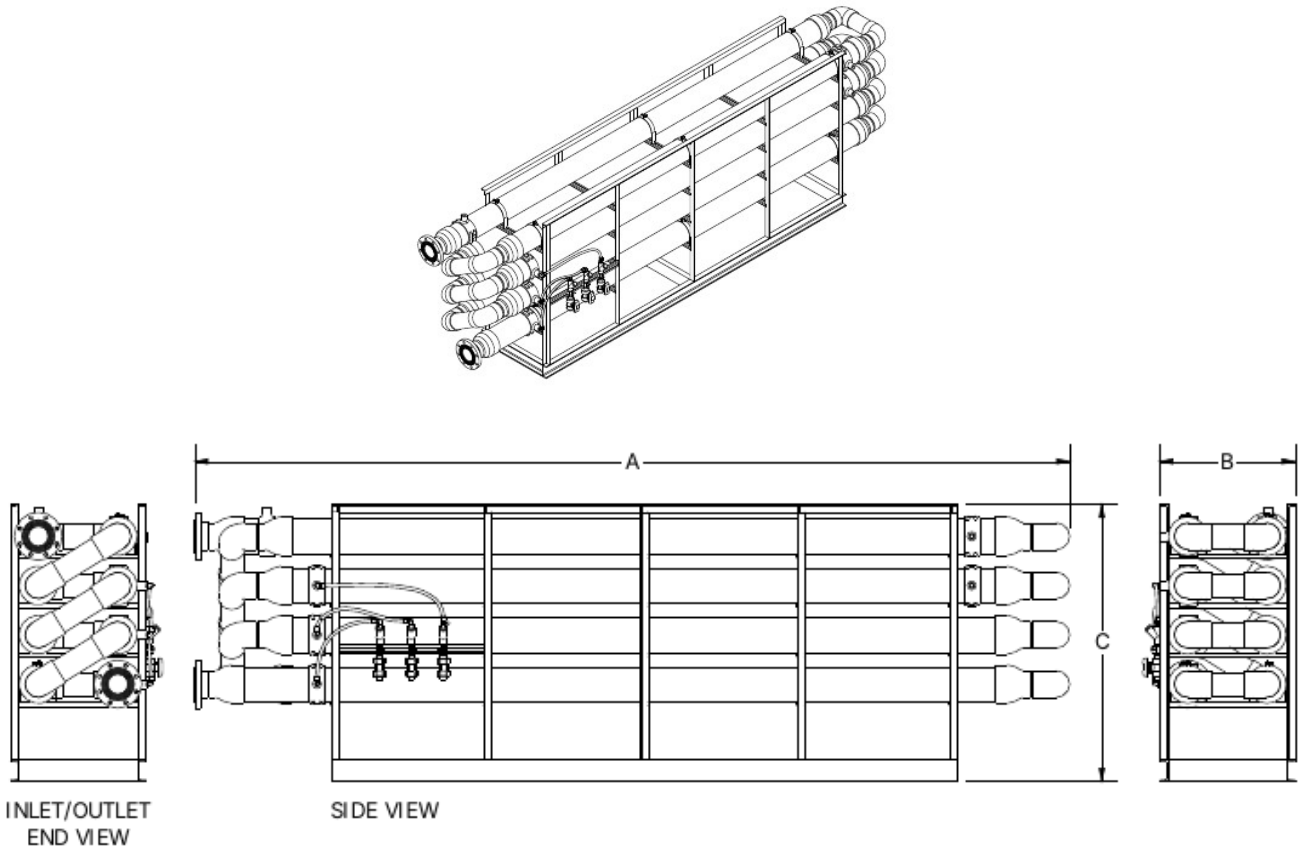
SPC Clarifier Link

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



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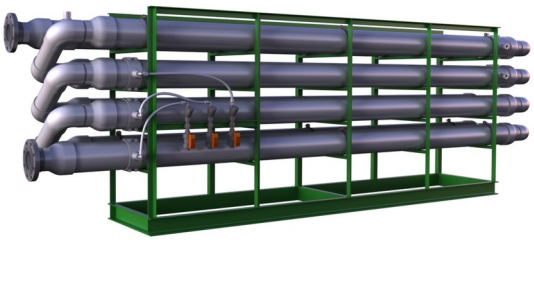
STAX Reference Drawing



Model	Flow rate Min	Flow rate Max	Inlet/outlet Size	Length	Width	Height	Weight Lbs
STAX-215	20	50	1.5"	65"	18"	22"	380
STAX-32	35	105	2"	65"	18"	22"	430
STAX-43	80	200	3"	100"	20"	29"	615
STAX-64	160	435	4"	164"	29"	52"	735
STAX-86	350	800	6"	224"	36"	65"	875
STAX-108	600	1250	8"	224"	36"	65"	1060

Model # is pipe diameter + elbow diameter & sch. 80 PVC. All inlet/outlets are 150# Van Stone flange

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Specifying an STAX Series Pipe Flocculator Systems for your project?

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