

## SECTION 15426

### Liquid-Solids Separation System

#### PART 1 – General

##### 1.01 DESCRIPTION

Furnish and install the liquid-solids separation system as specified herein.

##### 1.02 SUBMITTALS

- A. Submit six sets of drawings indicating components, assembly, dimensions, weights and loading, required clearances, and location and size of field connections. Indicate accessories where required for complete systems.
- B. Submit product data indicating rated performance, capacities, weights, specialties and accessories, electrical requirements and wiring diagrams. Submit manufacturer's installation instructions and four copies of O & M manual. This information may be submitted on CD Rom.

##### 1.03 WARRANTY

- A. Full parts warranty for one year from start-up or 18 months from shipment, whichever occurs first.
- B. Provide five year warranty for separator including material and workmanship only.

##### 1.04 SHIPMENT

Ship FOB factory, full freight allowed to jobsite.

#### PART 2 – Products

##### 2.01 PERFORMANCE

Unit shall have a rated flow capacity of **XXX** GPM. Unit pump shall develop sufficient head to allow for 50 feet in piping losses excluding basin flow nozzles. Motor horsepower shall be **XXX** HP. Unit shall be suitable for 460 volt, 3 phase, 60 hertz power supply. Unit and accessories shall be designed and constructed to remove solids as specified herein from the basin of a **XXX** cell cooling tower.

## 2.02 CONSTRUCTION

- A. A completely assembled package shall be supplied from the isolated recirculation and particle separation /filtration of the fluid in the cooling tower basin in order to prevent accumulation of solids in the tower basin. Flow through the separator package shall be continuous, without interruption for the periodic evacuation of separated solids.
- B. Provide **XXX** sweeper jets nozzles with over shaped flow pattern for installation in cooling tower basin. Each nozzle shall be capable of increasing its input flow, at 20 psi or more, to five times greater output, thereby providing the proper directed turbulence to prevent solids accumulation and induce separable solids to the separator package's pump suction.
- C. The separator package shall provide for initial pre-straining prior to pump suction, followed by directly pumping through a centrifugal action solids from liquid separator and immediate return of flow to the nozzles. Separated solids shall be continuously bled from the separator's collection chamber into the package's integral solids recovery vessel and solids collection bag.
- D. Strainer: Cast Iron housing, manual cleaning, 9/32-inch minimum mesh rating.
- E. Pump: End-suction, single stage; TEFC motor, cast iron or bronze housing, iron or stainless shaft, bronze or cast iron impeller with shaft sleeve and with mechanical seal for shaft sealing. No packing allowed for pump shaft sealing
- F. Separator: Centrifugal-action design, incorporating a tangential inlet to promote the proper velocity necessary for the removal of the separable solids. When operating in the separator flow midrange, single pass separation for solids with a specific gravity of 1.8 and greater shall yield 98% removal of particulate 71 micron and larger. Operating pressure differential shall be between 3 and 10 psig. The centrifugal separator housing shall be constructed of carbon steel and shall have an epoxy coated exterior. The separator housing shall be equipped with a manual air vent and inlet & outlet pressure gauges. Separator inlet and outlet shall be ANSI 150 lb. raised face flanged connections. The separator and system matched pump shall be designed to accommodate flows ranging from **XXX** to **XXX** gallons per minute.

- G.** To reduce maintenance, the separator shall not require acceleration slots to achieve the specified separation performance. Separated solids shall collect in the separator lower chamber and shall be continuously purged to a bag filter.
- H.** Separated particle matter shall spiral downward along the perimeter of the inner separation barrel and into the solids collection chamber, located below the vortex deflector plate.
- I.** System fluid shall exit the separator by following the center vortex finder in the separation barrel and spiral upward to the separator outlet.
- J.** Separator design shall include a 150 lb. flanged removable lid for removal and easy access for internal inspection. The separator shall also incorporate a hand-hole clean-out in the solids collection chamber.
- K.** When operating in the separator designated flow, single pass separation for solids with a specific gravity of 1.8 and greater shall yield 98% removal of particulate 71 micron and larger. Operating pressure differential shall be between 3 and 10 psig. The centrifugal separator housing shall be constructed of carbon steel and shall have an epoxy coated exterior. The separator housing shall be equipped with a manual air vent and inlet & outlet pressure gauges. Separator inlet and outlet shall be ANSI 150 lb. raised face flanged connections.
- L.** Solids collection vessel: housing shall be carbon steel 7 x 36" 150 lb rated bag filter with stainless steel basket and coated carbon steel lid with air relief valve. 25 micron fiberfelt solids collection bag.
- M.** In indicator package: sensing pressure differential through the solids recovery vessel, shall identify when the internal bag requires cleaning and or replacement. A visual indicator shall be installed with a dry contact for remote indication that the bag filter needs servicing.
- N.** Piping: Schedule 80 PVC
- O.** Electrical control panel: NEMA-4X UL control panel with all electrical components necessary for a complete and operational system.
- P.** Valves: Ball valves on purge line for isolation of solids handling equipment.
- Q.** Skid plate: carbon steel epoxy coated for separator packages over 4". Packaged systems smaller than 4" use stainless steel structural steel framework.
- R.** Maximum working pressure and temperature: 150 PSI , 100 F

## **2.03 MANUFACTURER:**

Acceptable Manufacture: PEP Filters Model ~~XXX~~, or acceptable equal.

## **Part 3 – EXECUTION**

### **3.01 INSTALLATION**

- A.** Coordinate with installing contractor to ensure equipment installed in conformance with manufacturer's recommendations and these specifications.
- B.** Provide factory trained service personnel for start up services and equipment checkout. If deficiencies are noted by the field service representative, the Contractor shall make necessary corrections and the manufacturer's field service personnel shall return as many times as required until all corrections are made and verified at no additional cost to the Owner. A written report shall be filed with the Engineer at each visit.
- C.** Provide detailed wiring diagrams identifying all field wiring required by size and terminal block number.

15426-4