World-Class Equipment & Process Expertise

Scavenging Ion Exchange

SIX20S Selective Metal Scavenger

TANKS

System Feed pH Adjust

Volume……750 gallons

Effluent pH Adjust

Volume……750 gallons

TANKS COMPONENTS

Feed Pump (1)

Horsepower……2-HP

Effluent Pump (1)

Horsepower……2-HP

Chemical Pumps (6)

Capacity……12-GPH

Mixers (2)

Horsepower ……3/4-HP

PRE-TREATMENT

Hydrus Multi-Media Filter

Vessel…… 21”x72” Poly-glass

Media…… Macrolite M2

Volume per Vessel ……5-Ft^3

Hydrus Carbon Filter

Vessel…… 21”x72” Poly-glass

Media……Activated Carbon

Volume per Vessel ……6-Ft^3

Bag Filter (skid-mounted)

Number……One (1)

Filter Rating……5-micron

SIX COMPONENTS

Cation Exchangers

Number…….. Two (2)

Vessel Size……30” x 72”

Construction…… PE Lined Fiberglass

Resin……Macroporous Chelating

Volume per Vessel…… 10-Ft^3

Controls

Flow Control Valves……Air-actuated

System Flow ……Signet 2537

Controller……Compactlogix PAC

Touchscreen ……10” PanelView 7+

Acid & Caustic Level Switches……One (1) of Each

OPERATING SPECIFICATIONS

Feed Water

Temperature……55°F-105°F

pH……3 -5 SU

Maximum Metal (mg/L)……<50

Nominal Flow……20 gpm

TSS (mg/L)……<30

TDS (mg/L) ……<15,000

Product Water

Metals (mg/L) ……<1

pH……3 -5 SU

REGENERATION

Flow Configuration……Alternating Lead-Lag

Backwash ……Up-Flow

Regeneration……Down-Flow

Waste Flow……4-gpm

Cycle Time……144-Minutes

Acid Regeneration

Sulfuric Acid ……16.5-gals

Waste per Cycle……274-gals

Metals Removal……12-lbs

Sodium Conditioning

NaOH ……3.0-gals

Waste per Cycle……120-gals

Recirculated Rinse Water……160-gals

SYSTEM UTILITIES

Electrical Supply Voltage ……208-230/460

Full Load Amps……40/20

Compressed Air……50-scfm

PHYSICAL DATA

Tanks & Mixers/Pumps Skid ……16’ L x 6’ W x 10’ H

SIX Scavenging Skid ……7’ L x 4’ W x 7’6” H

Combined Shipping/Operating Wt.(lbs)……2800/2,0000

Frame Coating……304 SS/Polyurethane

Piping……Schedule 80 PVC

For more information visit www.waterinnovations.net
Contact at 760.294.1888 sales@waterinnovations.net

Operating Profile - Removes dissolved metals from compatible feed water with TDS <15,000-mg/l using pre-treatment by back-washable carbon & replaceable bag filtration followed by lead-lag ion exchange with chelating resin. Produces a continuous supply of product water with less than 1-mg/l residual metals with duplex vessels except when one is in regeneration

System Feed Tank - Constructed of HDLPE and sized based on system operating capacity. Level control provides for automatic system operation, high level alarm, and to prevent the feed pump from running dry. Tank fittings for inlets & outlets pipes including tank isolation valve are included. As applicable, includes required seismic anchoring with PE certification. Solution pH is measured with a submersible sensor, with agitation by a gear-drive mixer and dosing of sulfuric acid and sodium hydroxide to maintain feed water pH within the acceptable 3-5 operating range. The system feed pump is sized to provide full rated-service flow even during periodic resin regeneration. Constructed of 316 SS, Viton® & ceramic wetted-parts. Centrifugal-drive 230/460VAC TEFC motor with optional variable Hz drives for soft-start to optimize operating efficiency. Includes pump inlet isolation & outlet check valves for service

Pre-Treatment -Includes a carbon filter(s) sized for minimum service flow of 8-gpm per ft2 of bed surface area. Utilizes Hydrus control valve for automatic up-flow backwash to remove accumulated particles during service cycle without need to take system off-line automatically triggered based upon the totalized flow since the previous backwash with operator-adjustable set point or manually through the HMI. There are one or more bag filter housings rated for nominal system flow, constructed of reinforced polypropylene with filter bags made of polypropylene with a nominal rating of 5 microns

Chelating Resin Exchangers – The two-vessel unit alternates between lead and lag positions with the lead vessel removed from service and regenerated once assumed-to-be fully-exhausted top maximize system efficiency. Service flow as pressurized by the feed pump is down-flow with internal upper slotted and bottom diffuser ensuring distributed flow throughout the vessels. System flow rate is controlled by a diaphragm valve on the service outlet with visual monitoring utilizing both an in-line rotameter and flow sensor

Regeneration - Each cation vessel shall utilize high-capacity, strong acid, macroporous chelating resin, with a metals removal capacity of up to 1.5 lbs per cubic foot when regenerated with 6 pounds of sulfuric acid per cubic foot of resin. Regenerations are triggered automatically based on assumed resin loading as calculated considering feed water metals concentration and totalized flow or manually based on a comparison of feed and product water soluble metals concentration. Includes an initial up-flow backwash to remove trapped suspended solids, followed by metals removal by sulfuric acid with a rinse cycle to flush metals and excess chemistry, with a conditioning step with NaOH to convert the resin to its more effective sodium form. - Regeneration chemicals are drawn from customer provided 55-gallon drums or bulk tank. The feed is educted by an in-line valve pressurized with DI water and its concentration verified with a hydrometer and adjusted with proportional valving to control the flow of chemical regulated from 0-10 lbs/ft3.

System Skids - Components other than tanks are skid-mounted, pre-piped, & pre-wired limiting installation to interconnect piping & electrical connections. Construction is of 304- SS with sandblasting prior to a polyurethane coating. Skids include feet for securing skids to the floor and lugs for electrical grounding of electrical components. On-skid and interconnect piping is Schedule 80 PVC with both solvent welded and threaded connections

System Controls – Operation, monitoring, and control of the integrated system utilizes an Allen-Bradley CompactLogix programmable automation controller (PAC) with Human-machine interface (HMI) through a Panelview Plus color touch screen. System operation while highly automated also employs manual control with an intuitive operator-friendly interface. System operating set points and alarms are set at the touch screen which is password protected to limit access to the operator, supervisor, maintenance, or engineer based on necessity