



WASTE TANKS

Quantity	Two (2)
Volume	1,000 - 2,500 Gallons
Construction	Flat bottom HDLPE
Level Sensing	Ultrasonic
Transfer Control	Automatically Proportional
Pump Proportional Control	Variable Drive

SKID MOUNTED COMPONENTS

Waste Transfer Pumps	Centrifugal-drive
Reaction Tanks Mixer	Gear-reduced mechanical
Chemical Feed Pumps	12-20 gph w/ analog control
Sludge Recycling Pump	1/2" non-metallic AOD

CONTROLLER

Programmable Controller	CompactLogix PAC
HMI Touchscreen	10" PanelView 7+
Enclosure	Polycarbonate NEMA 4X
Status Notification	Red/Green Lights & Horn
HMI Access	Password-Protected
Remote Access	By Ethernet connection
Wireless Communication	Smart-phone email

REACTION TANKS

Quantity	Two (2)
Volume	1,000 - 2,500 Gallons
Construction	Flat-bottom HDLPE
Sch. 80 PVC Interconnect	Min. 3" Flanged
Process Control Sensors	pH, ORP & Level Sensors
Tank Internals	Bottom inlet- top outlet

OPERATING SPECIFICATIONS

Mounting	Elevated Platform	Temperature	55°F-105°F
Discharge Outlet	Gravity flow to Lamella	pH Range	2-12 SU
		Maximum Metals	<100 mg/L
		Feed Water	Non-cyanide bearing

INCLINED PLATE CLARIFIER

Construction	16" carbon steel/SSPC-SP6
Inside/Outside Paint	Two (2) coats epoxy
PVC Plate Pack Surface Area	4.7 ft ² per GPM
Operating Flow Rate	30 to 360 GPM
Sludge Transfer	Adjustable-timed

Reaction Tank Dwell Time	Minimum 20 minutes
Batch Cycle Time	5 Hours
Residual metals	<1 mg/L
Ending pH	8-10 SU

SLUDGE TANK

Volume	500 - 1,600 Gallons
Construction	Cone-bottom HDLPE
Level Sensing	Buoyancy High & Low
Tank Fittings	Sch. 80 PVC

UTILITIES

Electrical Voltage	208-230/460
Full Load Amps	60/30
Compressed Air	50-scfm

FILTER PRESS

Size	2 to 8 Cubic Foot
Design	Gasketed Plate & Frame
Hydraulic Closure	Semi-Automatic
Sludge Feed Pump	1" to 1 1/2" AOD
Operator Protection	Closure pressure switch
Sludge Collection	Cubic Yard "Supersacks"
Effluent Verification	Sludge tank recirculation
Feed Pump Automation	Auto-Pump Control

PHYSICAL DATA

Waste Tanks Diameter	64" to 95"
Reaction Tanks Diameter	73" to 96"
Sludge Tank Diameter	49" to 89"
Mixers/Pumps Skid	72" L x 48" W
Clarifier (L x W)	97" x 54" to 198" x 144"
Filter Press	Variable
Shipping/Operating Wt.	Variable
Frame/Coating	304SS/Polyurethane
Piping	Schedule 80 PVC

Operating Profile – For continuous treatment by chemical precipitation of flowing wastewater for removal of heavy metals, oil & grease (O&G), and organic contributors to BOD. Highly-automated including control of incoming dilute feed water; concentrated metering of concentrated feed water; 2-stage reaction tanks for pH adjust & metals precipitation/chrome reduction; and sludge transfer, recycling and dewatering.

Waste Tanks – Typically one (1) each for acidic & alkaline process rinses & other wastewater with optional one (1) each additional for concentrated acidic & alkaline waste for metered feed. Minimum 1,000-gallons or larger tanks depending upon daily waste volume, constructed of HDLPE with flat-bottom & dome-top, utilizing an ultrasonic sensor for liquid level monitoring and control of incoming waste & outgoing transfer.

Waste Feed Pumps – Typically one (1) each for acidic & alkaline wastewaters, non-metallic centrifugal-drive pumps acidic and alkaline waste feeds with variable frequency drives to adjust flow rates to balance solution pH in Stage 1 to minimize need for pH adjustment chemicals. If including concentrated acidic & alkaline waste tanks, electronic feed pumps are provided for metered feed to Stage 1 at operator-adjustable rates as alternative to batch treatment or off-site disposal.

Reaction Tanks – Stages 1 and 2 mounted on an integrated elevated platform with pressurized incoming feed and gravity-flow outlet to Inclined Plate Clarifier. Minimum 1,000-gallons or larger constructed of HDLPE with flat-bottom dome-top; minimum 3" PVC internal tanks pipe for flow control to maximize retention & reaction time; minimum 3" PVC flanged interconnect pipe incoming, between, & from reaction tanks for gravity flow; with gear-drive mixers with SS shaft & impellers.

Process Control – Stage 1 liquid level sensor to regulate incoming flows; Stages 1 & 2 pH sensor for proportional control of acid & caustic feed pumps; Stage 2 ORP sensor for proportional control of precipitant/chrome-reducer feed pump; and Stage 2 outlet flow sensor for proportional control of coagulant & flocculent feed pumps.

Chemical Feed Pumps – 12-gph or higher capacity electronic metering pumps with internal stroke control and external proportional speed control by 4-20 mA to feed coagulant to Stage 1; acid & caustic for pH adjust to Stages 1 & 2; and precipitant/chrome-reducer to Stage 2; with ¼" AOD pump for flocculent feed to IPC flash mix chamber. Includes chemical supply drums low level floats with operator alert when drums empty.

Elevated Platform Pumps & Mixer Stand - Constructed of stainless steel with polyurethane coating, providing access platform for Stages 1 & 2 Tanks, mounting for tank's mixers, and integrating waste pumps, chemical feed pumps, sludge recycling & transfer AOD pumps, and system control enclosure for sensors electrical connections.

Inclined Plate Clarifier - Available in 5 standard flow ratings from 30-gpm (97"L X 54"W) to 360-gpm (198"L X 144"W) with a flash and slow mix flocculent chamber followed by upward flow through a 60° inclined PVC plate pack with 4.7-ft3 of surface area per gpm to gravity-settle suspended solids as the pre-treated liquid flows up and out, with automatic accumulated sludge transfer by gravity through actuated valve to holding tank & recycling by AOD pump to Stage 1 Tank.

Sludge Tank – Minimum 500-gallon cone-bottom dome-top HDLPE with polyethylene stand; floats for control of incoming waste, supernate gravity-flow through manual valve with clear pipe for visual inspection & sample taps; for sludge feed to the filter press through a manual diaphragm valve on the cone outlet.

Filter Press – Gasketed-cloth plates, plate & frame structure utilizing a semi-automatic hydraulic closure. Elevated legs permit placement of a cubic yard box on pallet for ease of sludge accumulation. Integrates operator-safety cables and air supply switch preventing operation if not fully closed. 1.5" non-metallic AOD pump regulated by our proprietary Auto-Pump Controller (APC) automatically increases air volume & pressure as the press plates load and the pump stroke rate slows

System Controls – Allen-Bradley CompactLogix PAC with intuitive operator-friendly Human-machine interface (HMI) through a Panelview Plus touch screen provides for highly automated operation, monitoring, & control with password-protected set points and alarms to limit access to the operator, supervisor, maintenance, or engineer based on necessity.

