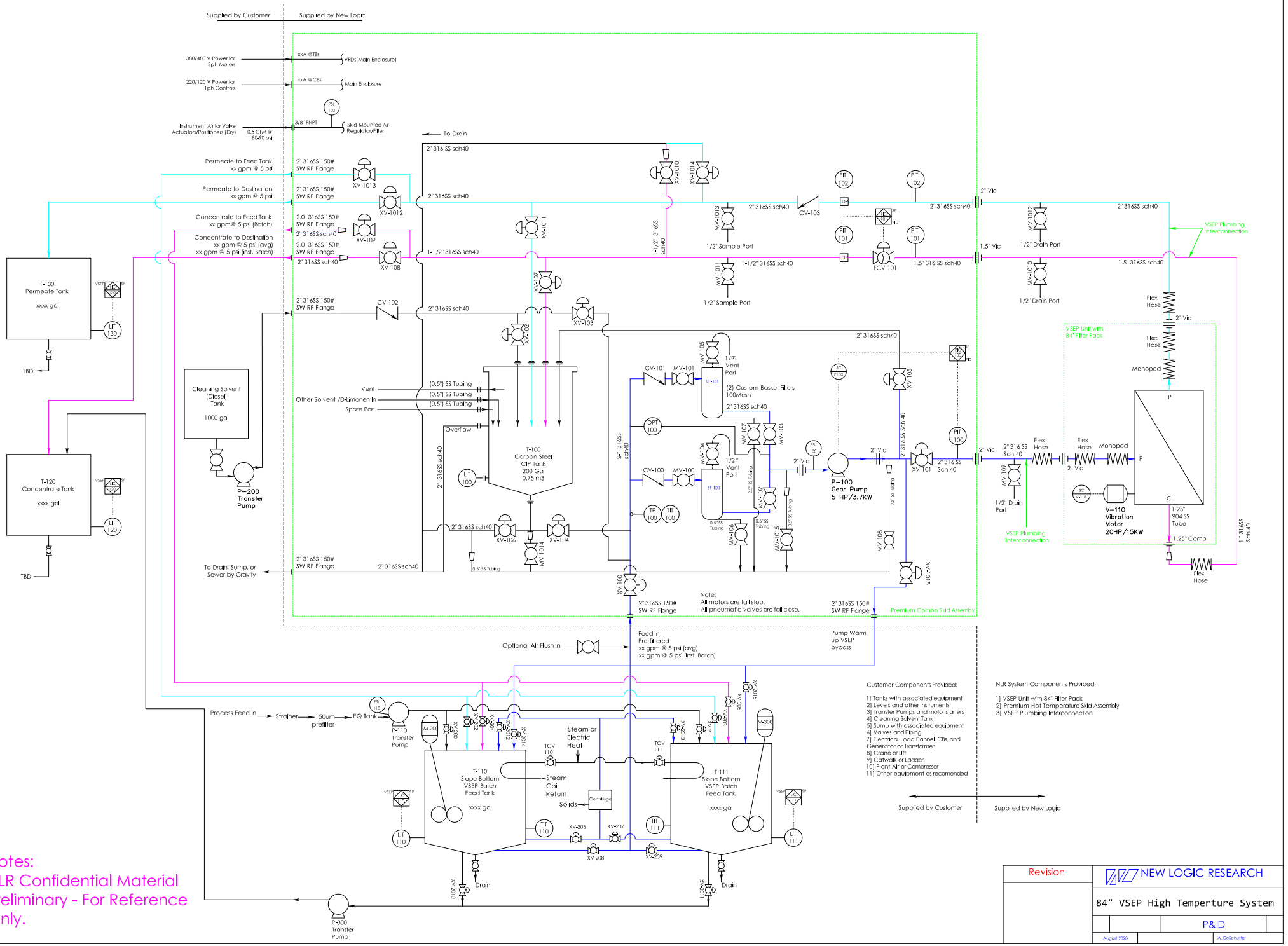
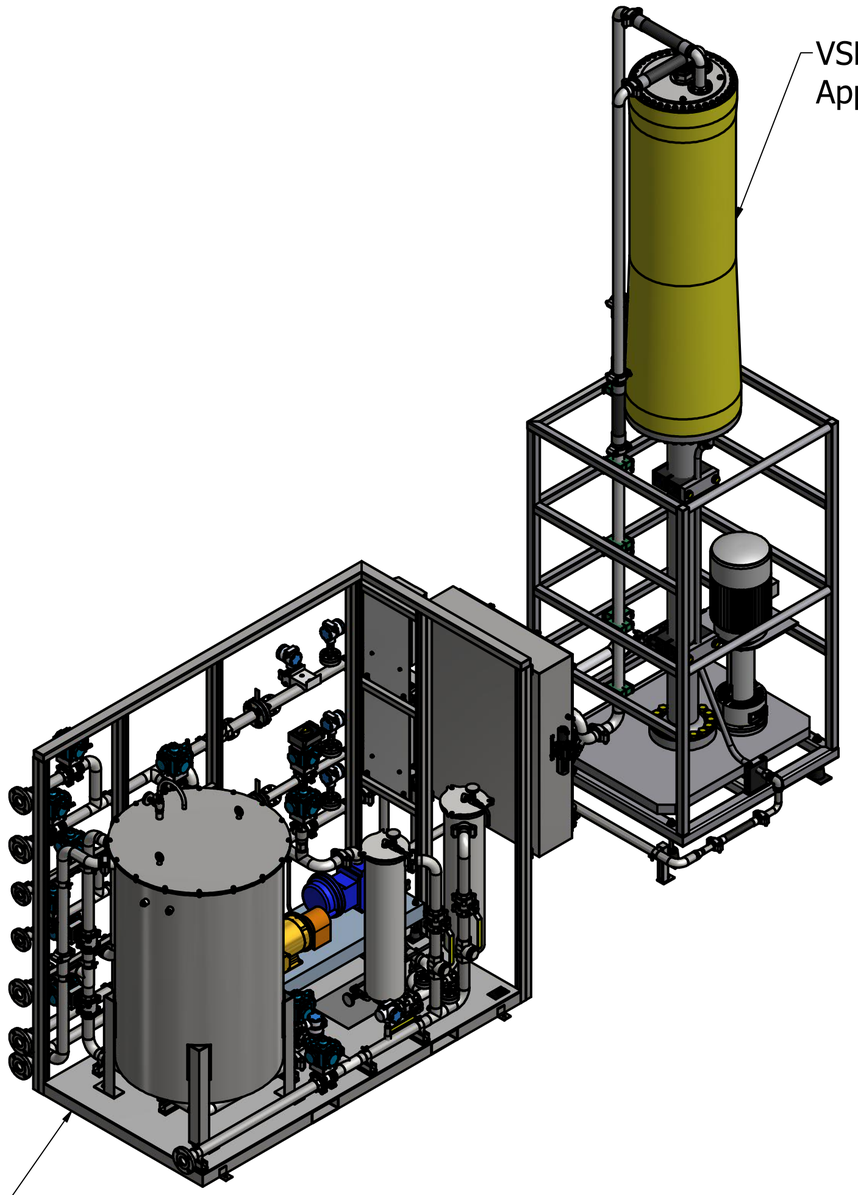


Notes:
NLR Confidential Material
Preliminary - For Reference Only.

Revision	NEW LOGIC RESEARCH
	84" VSEP High Temperture System
	P&ID
	August 2020 — A. DeSchutter

FRONT ISO VIEW



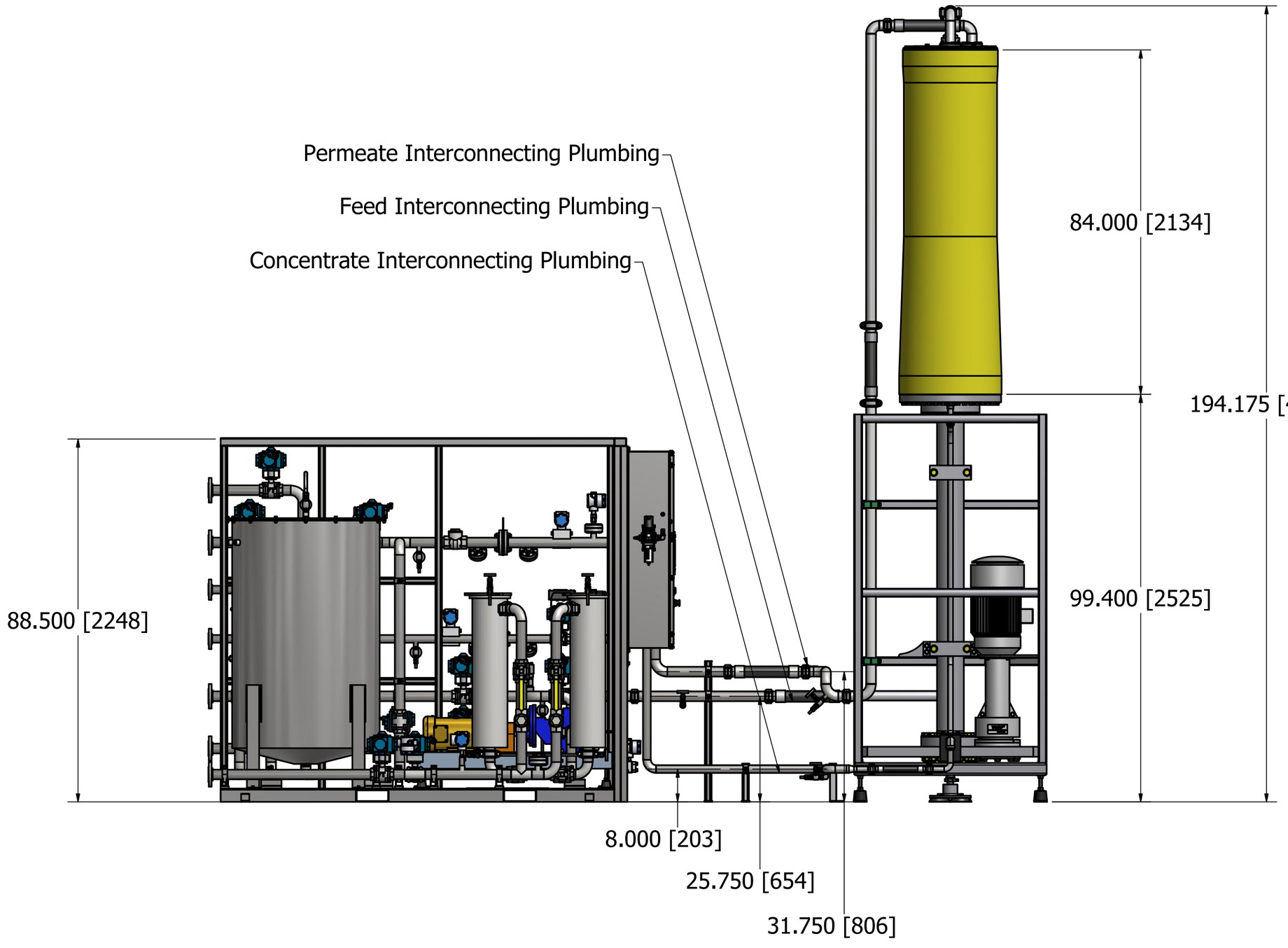
VSEP Unit with 84" Filter Pack
Approximate Weight - 5650 lbs [2560 kg]

High Temperature Combo Skid Assembly
Approximate Weight - 3526 lbs [1600kg]

84" High Temperature Combo System

NOTES:
1. New Logic Research confidential material.
2. Slight differences between drawings and actual system may be attributed to New Logic Research Continuously evolving and improving its technology.
3. All dimensions are shown in inches [mm] and for reference only.

FRONT VIEW



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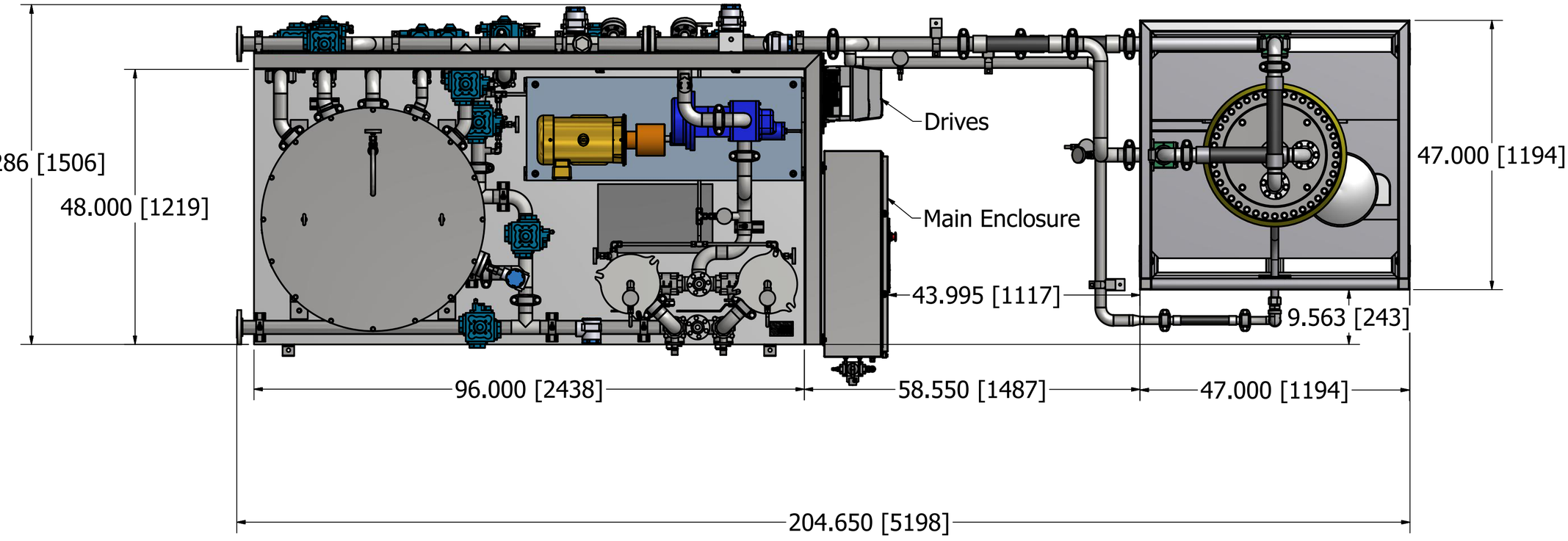
TOP VIEW



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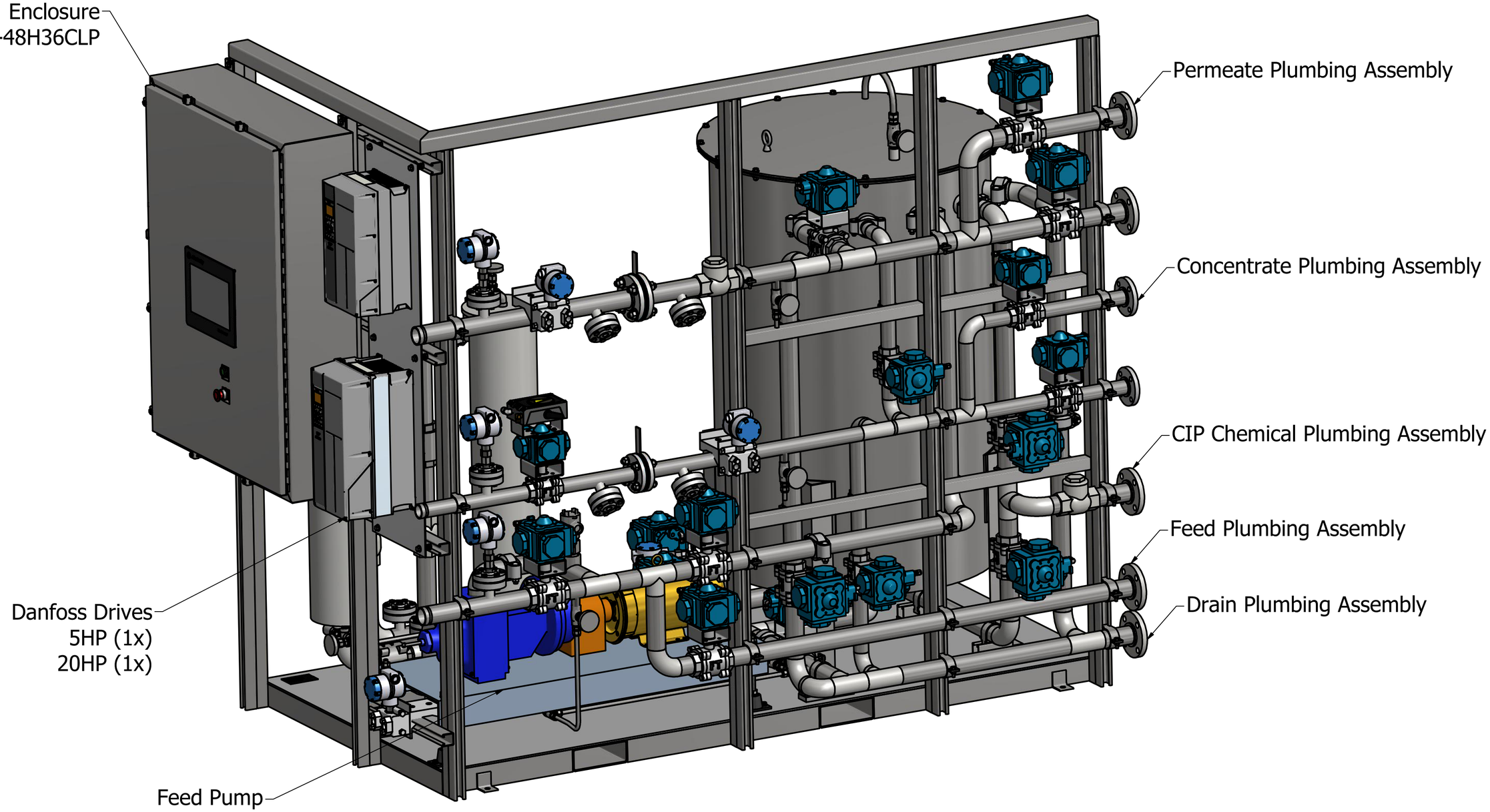
BACK ISO VIEW



High Temperature Combo Skid Assembly

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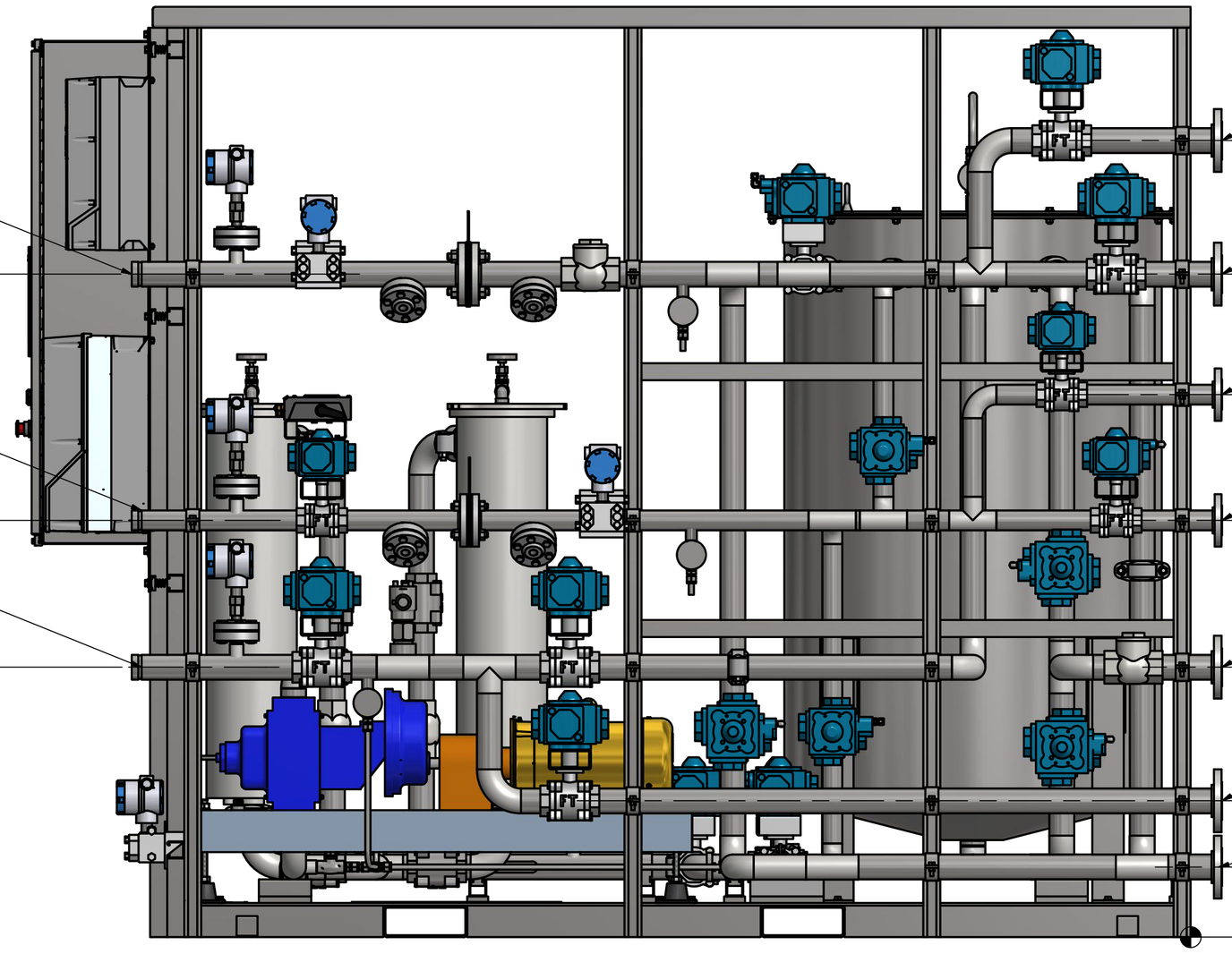
FRONT VIEW



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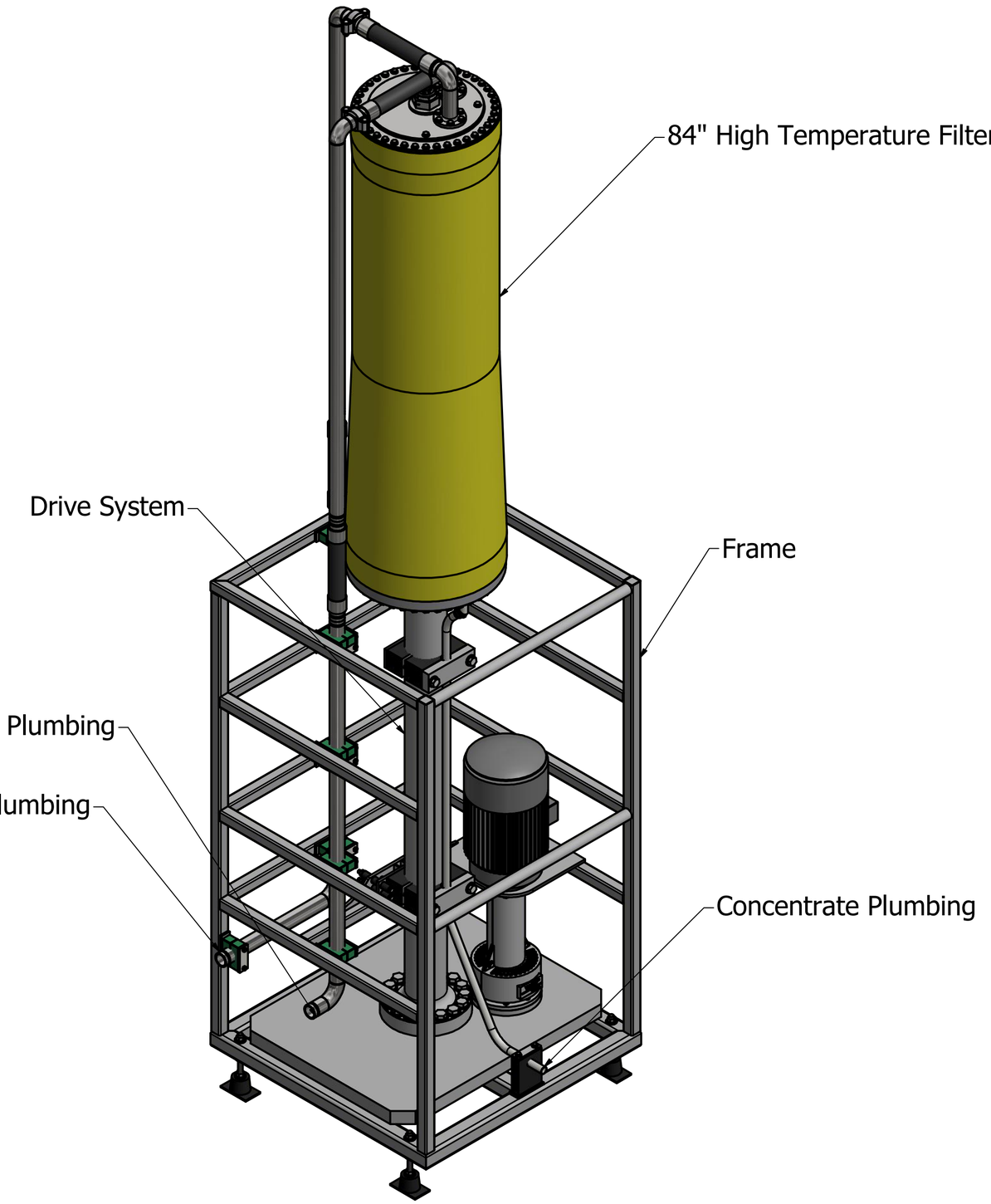
TOP VIEW



Standard 84" VSEP Unit

NOTES:
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V✧SEP SYSTEM COMPONENT SPECIFICATIONS

84” VSEP High Temperature System

1] Filter Pack:

Membrane:	MF
Allowable Process Temperature:	5º-120ºC (some membranes have higher limits up to 120ºC)
Max Process Pressure:	550 psi (3,800 kPa)
Allowable Feed Slurry pH Range:	2-12 (some membranes have different limits 1-13)
O-ring and Seal Material:	Viton
Filter Pack Housing:	Glass impregnated epoxy resin (FRP)
Wetted Steel Trays:	Carbon Steel (option for 316)
Wetted Plastic End Plates:	Stainless Steel

2] Vibration System:

Vibration Drive Motor:	Baldor 460VAC, 3phase, 20HP, 3525 RPM
Motor Speed Controller:	Danfoss 20HP 380-480VAC, NEMA 4 (or Equal)
Max. Vibration Amplitude:	3/4 inch (peak to peak measured at the Filter Pack)
Frequency Range:	43.0 Hz to 55.0 Hz (Approximate)
Maximum Decibels:	<85
Bearing RPM:	2800 to 3100
Bearing Oil:	Sullube ~750 ml Compressor Oil
Bearing O-rings:	2-263 & 2-270 Buna

3] Pump Specifications:

Feed Pump Type:	Ranger Gear Pump
Feed Pump Motor:	Baldor 5 HP TEFC 460VAC, 3phase
Motor Speed Controller:	Danfoss 380-480VAC, NEMA 4 (or Equal)

4] Pre-Screen Basket Strainer:

Filter Housing Type:	NLR Custom Made 316 SS
Basket Strainer:	60 Mesh 304 SS
Capacity:	120 GPM, 4.6 sqft
Elastomers (Seals):	Viton

5] Operating Site Conditions (Option for CIDII Hazardous Location):

Equipment Rating:	NEMA 4, Indoor/Outdoor protect from sunlight & rain.
Ambient Temperature:	5º - 37°C
Storage Temperature:	2º - 70°C (Protect Filter Pack from Freezing)
Max Relative Humidity:	<95%, non-condensing
Elevation:	3300 ft maximum without derating VFD/Motor

V✧SEP SYSTEM COMPONENT SPECIFICATIONS (continued)

6] Piping:

High Pressure Piping:	Schedule 80 316 SS
Low Pressure Piping:	Schedule 40 316 SS
Special VSEP Concentrate Pipe:	1-1/4” OD 904L Stainless Steel Tubing .065 wall
Flexible Hoses:	SBR/NBR Lined Reinforced Flex Hose
Pipe Clamps:	Zero-Flex Victaulic Style 07 Viton
Pneumatic Air Supply:	90lb Instrument Grade Air (3/8" connection)
Tubing Fittings:	Hylok 316 SS
Clean in Place Tank:	200 Gallon Sloped Carbon Steel (36” ø x 54”)
On/Off Valves:	316 SS 3-piece ball valve
Manual Valves:	316 SS 3-piece ball valve
Flow Control Valves:	316 SS V-port ball valve
Check Valves:	316 SS swing check valve
Pneumatic Actuators:	Compact 4, Spring Return
Positioners:	BLX Linear Quarter Turn I/P
Skid Pipe Terminations:	150 lb 316 SS Raised Face Flange
Flange Gaskets:	150 lb Garlock Blue Guard

4] Electrical:

Controls Voltage:	120/220VAC, 1phase, 15A, 50/60Hz
Enclosures:	Hoffman NEMA 4 Powdercoat Finish 48x30x10, 24x30x8
Switches, Relays, & Contactors:	Allen Bradley 120/220 Volt
Remote Access:	Ewon Cosy 131
Programmable Controller:	AB CompactLogix 1769
Operator Display:	AB Versa View 5400
IO Link Masters and Hubs:	IFM Efector AL1122
Pressure Sensors:	Autrol APT3200G
Mag Flow Tube and Transmitter:	Autrol APT3100D
Bag Filter DP Sensors:	Autrol APT3100D
Temperature Sensor:	Autrol ATT2100
Level Sensors:	Autrol APT3100D
Solenoid Valves:	Festo Manifold Gang Mounted Dual 3/2 24 VDC, IO Link
Optional:	Explosion proof instrumentation and enclosure with air purge For CIDII hazardous locations available.

Utility Summary					New Logic Research
VSEP System					
AIR COMPRESSOR SIZING INFORMATION					
	# of Valves	In^3 Air/stroke	Strokes/day	SCFM	M3/hr
VSEP					
1.5" Pneumatic Valves	6	35	20	0.0017	0.0029
2" Pneumatic Valves	21	60	20	0.0101	0.0172
1" Flow Control Valves	1	35	20	0.5003	0.8505
System Air Totals			**System Totals**	**0.51**	**0.8706**
Supply instument grade dry air at 80-90 psi (560-630kPa)					
Supply air to enclosure mounted regulator/filter 3/8" NPT connection					
Totals do not include air for tools or other sources.					
ESTIMATED SOLVENT INFORMATION					
	# /Day	Temp degC	Gallons/Day	GPM	M3/hr
VSEP					
Cleanings	1	50-60	25	0.02	0.0039
Intermittent need of additional cleaning or flush of filter pack	0.14	50-60	5	0.00	0.0008
System Water Totals			**System Totals**	**0.02**	**0.0047**
Note typically can reuse solvent multiple times prior to disposal					
Some applications can blend used solvent with either Feed or Concentrate streams					
ELECTRICAL LOAD PANEL SIZING INFORMATION					
Circuit Breaker Sizing 1.25-2x Nameplate Current					
3-Phase Power Voltage VAC	400-460	50/60 Hz			
1-Phase Power Voltage VAC	220-120	50/60 Hz			
	# Motors	Rated Motor HP	Nameplate Current	Nameplate Current	Recommended CB Sizing
			400V	460V	
VSEP Drive Motor	1	20	26.3	24.0	40
VSEP Feed Pump	1	10	14.6	12.0	20
Totals	**2**				
Supply 3-Phase power from customer supplied load panel (with circuit breakers, disconnects, line filters, etc.) to the inlet of each VFD provided by New Logic.					
	# Connections	Rated Motor	Nameplate	Nameplate	Recommended
			220V	120V	
Main Control Enclosures	1	NA	10	8.0	20
Supply 1-phase power from customer supplied load panel (with circuit breakers, ups, etc.) to New Logic provided circuit breakers inside the Main VSEP control enclosure (PLC/HMI/24VDC Power Supply).					
Note: These are estimates only based on very preliminary data. These calculations are subject to change and do not include equipment offskid of VSEP system (ie: Transfer Pumps, Generators, Heaters, Lighting, Cranes, etc). For power consumption estimates refer to the operating cost spreadsheet.					