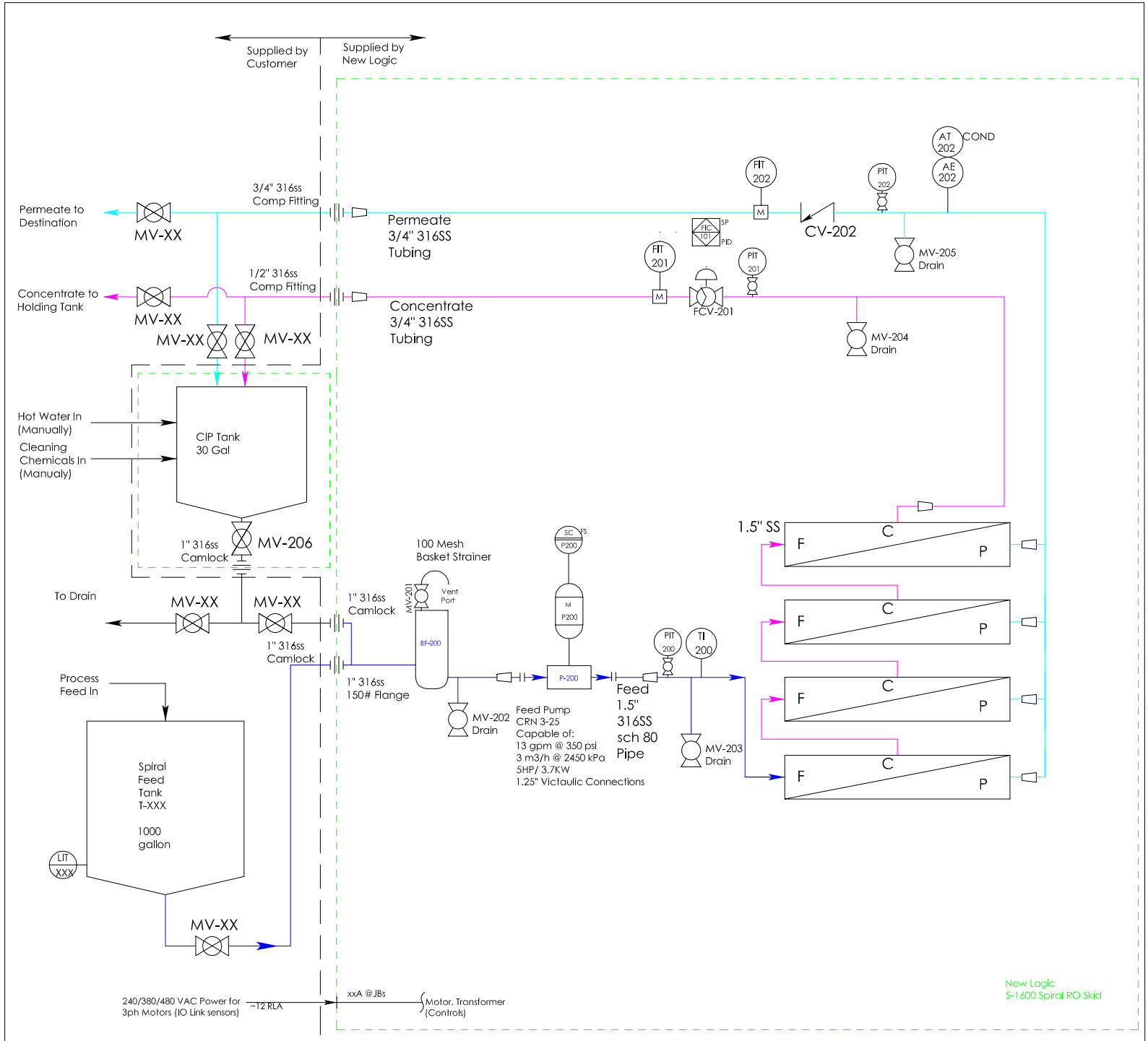
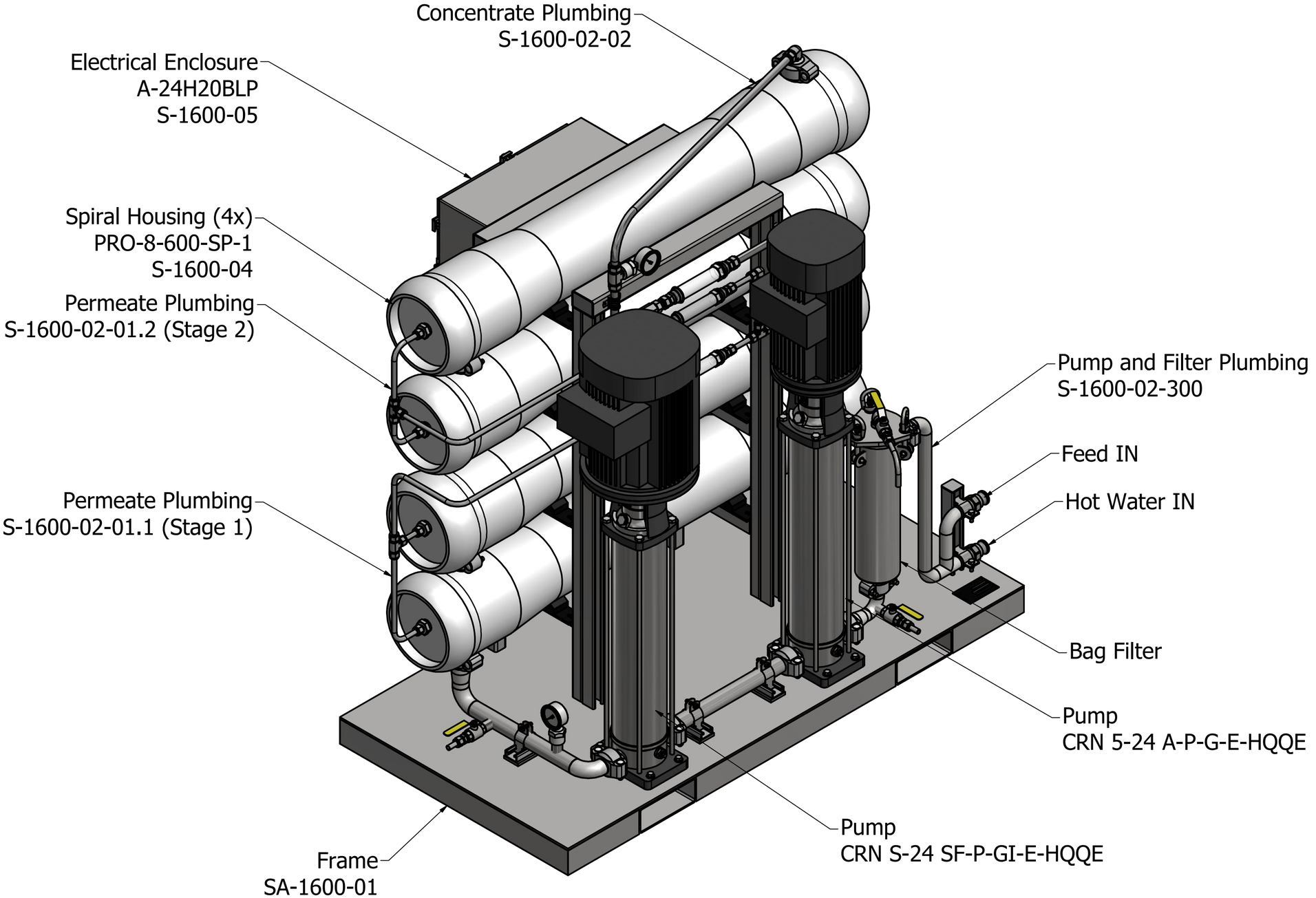

Supplied by Customer
Supplied by New Logic
Permeate to Destination
MV-XX
3/4" 316ss Comp Fitting
Permeate 3/4" 316SS Tubing
FIT 202
PIT 202
AT 202
COND
AE 202
FIC 101
SP
PID
CV-202
MV-205 Drain
Concentrate to Holding Tank
1/2" 316ss Comp Fitting
Concentrate 3/4" 316SS Tubing
FIT 201
PIT 201
FCV-201
MV-204 Drain
Hot Water In (Manually)
Cleaning Chemicals In (Manualy)
CIP Tank 30 Gal
1" 316ss Camlock
MV-206
To Drain
100 Mesh Basket Strainer
1" 316ss Camlock
MV-201
Vent Port
BF-200
SC
FS
P200
M
P200
P-200
PIT 200
TI 200
1.5" SS
F
C
P
Process Feed In
Spiral Feed Tank T-XXX
1000 gallon
LIT XXX
1" 316ss 150# Flange
MV-202 Drain
Feed Pump CRN 3-25 Capable of: 13 gpm @ 350 psi 3 m3/h @ 2450 kPa 5HP/ 3.7KW 1.25" Victaulic Connections
Feed 1.5" 316SS sch 80 Pipe
MV-203 Drain
240/380/480 VAC Power for 3ph Motors (IO Link sensors)
~12 RLA
xxA @JBs
Motor, Transformer (Controls)
New Logic
S-1600 Spiral RO Skid
Confidential Material
Preliminary Only
Revision
NEW LOGIC RESEARCH
S-1600 Spiral System
P&ID
August 2020
M. Ayers

ISO VIEW

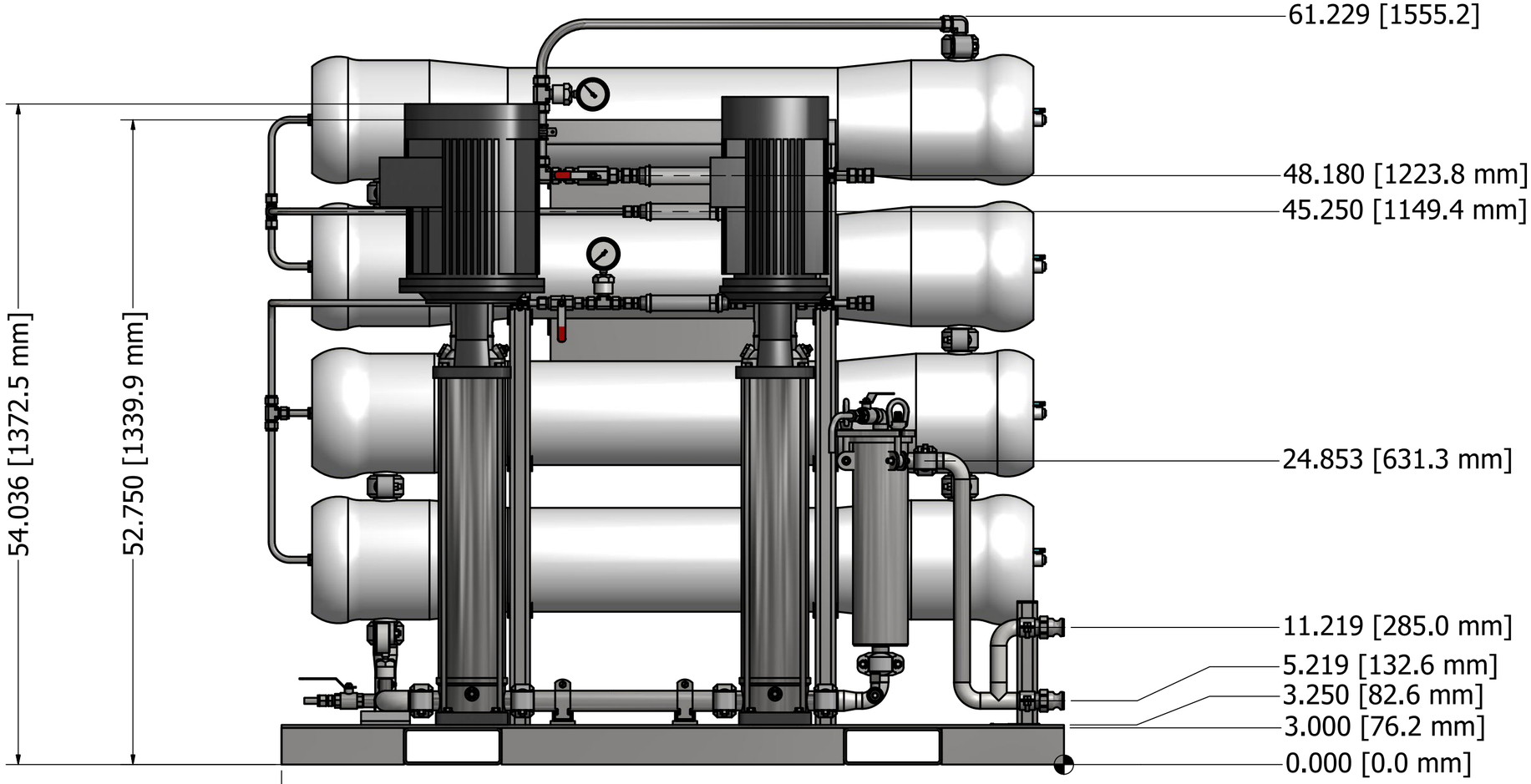


S-1600 Spiral System

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



S-1600 Spiral System

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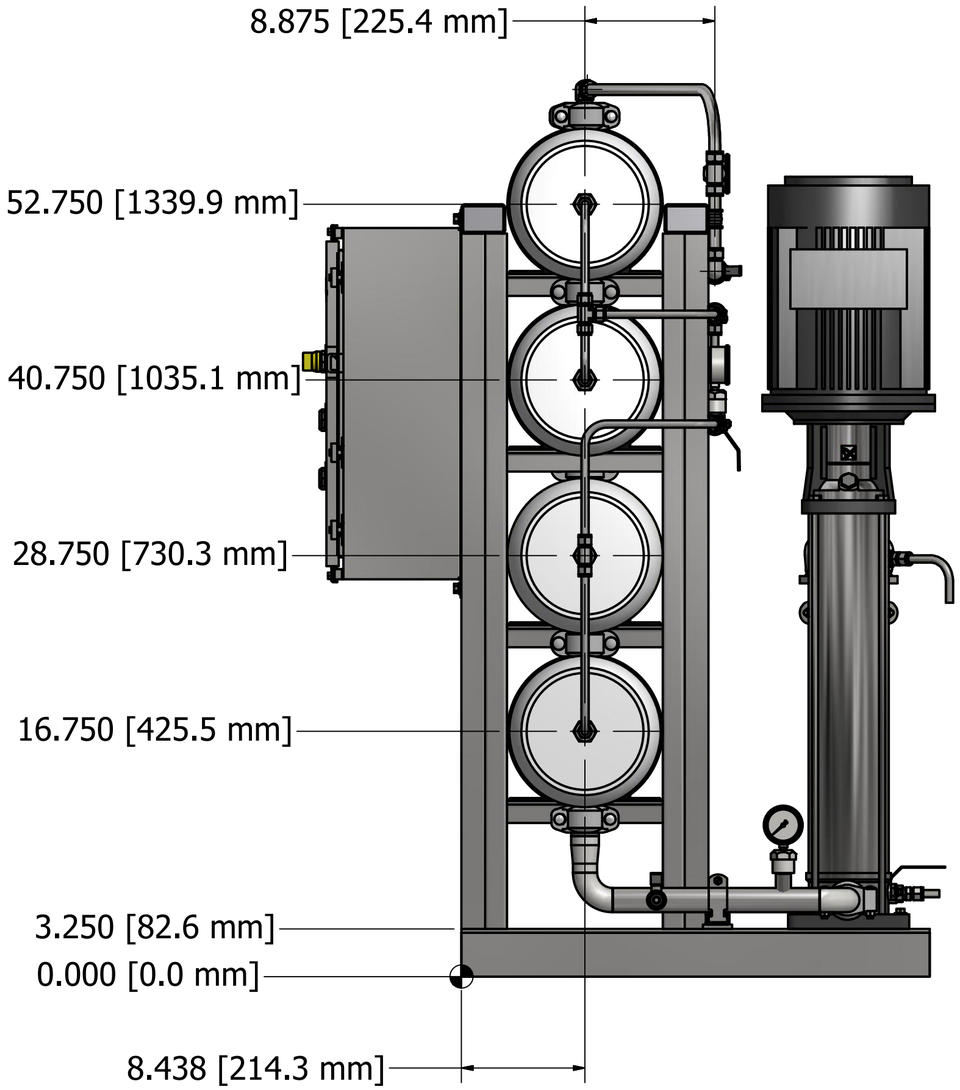
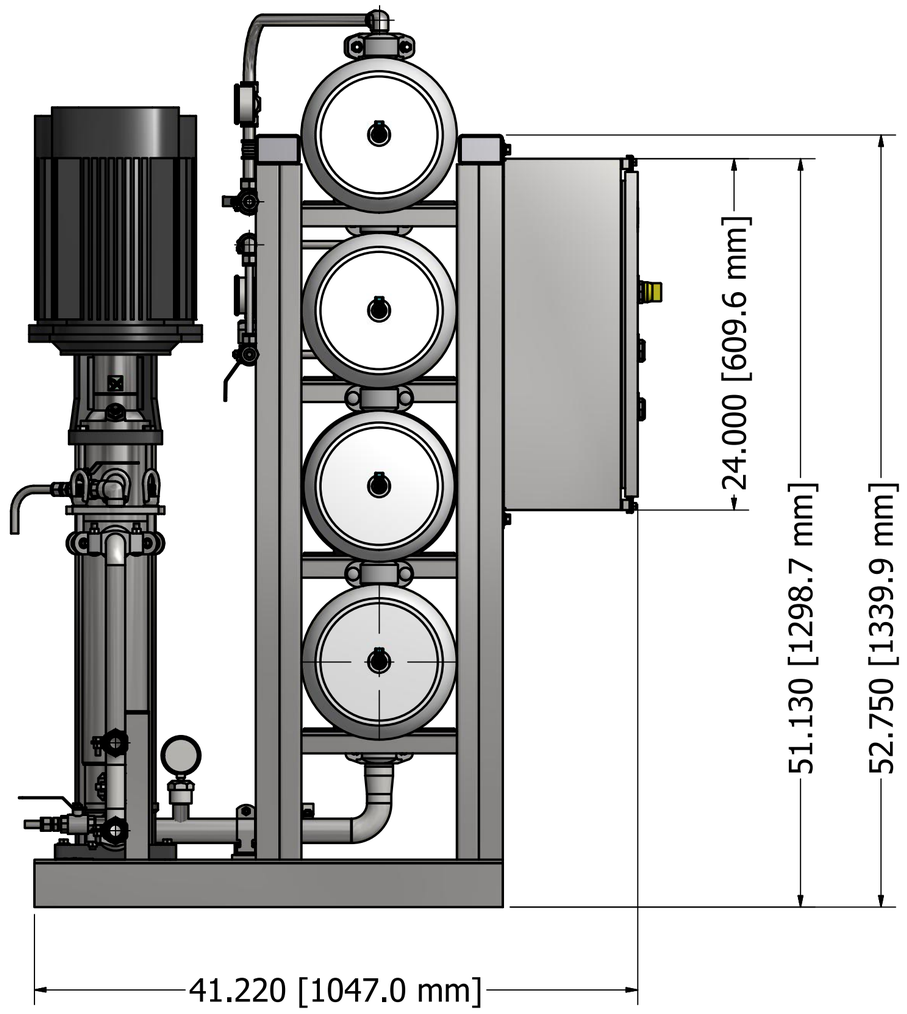
SIDE VIEWS

LEFT



RIGHT



S-1600 Spiral System

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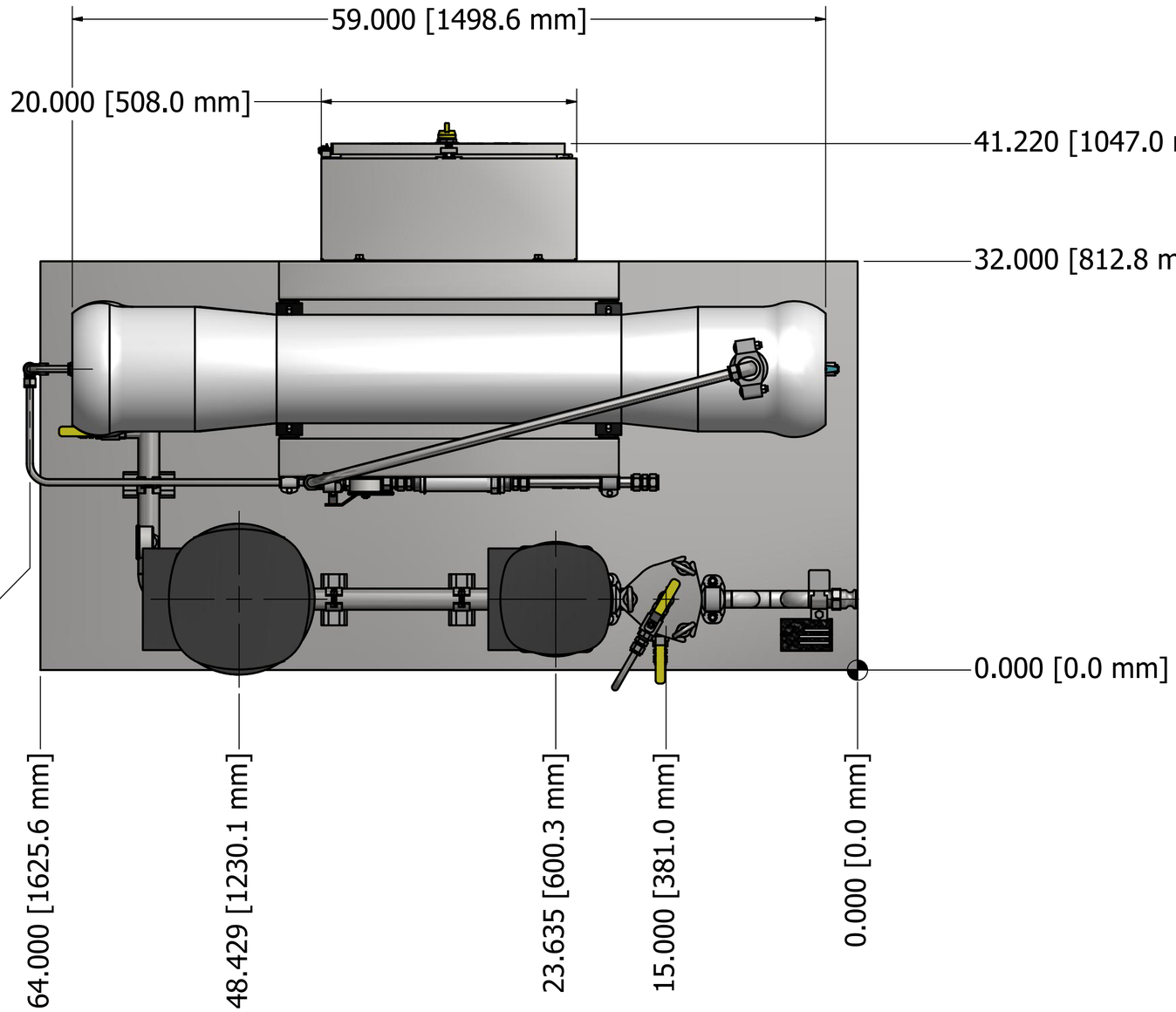
TOP VIEW



S-1600 Spiral System

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SPIRAL SYSTEM COMPONENT SPECIFICATIONS

S-1600 Spiral System

1] Filter Pack

Membrane:	MF, UF, NF, RO (depends on application and pilot testing)
Membrane Surface Area:	1600sf (148.6m2) (4ea 8”Dia x 40”L)
Estimated Production:	5.7-11.4 gpm (at 5-10GFD)
Maximum Operating Temperature:	120 ^{O}F (49ºC) (Options for up to 80ºC)
Allowable Feed Slurry pH Range:	2-11 (Options for 1-14)
O-ring Material:	Ethylene Propylene
Filter Pack Housing:	Polyurethane Coated, Filament Wound, Epoxy FRP
Wetted Ports:	316L Stainless Steel
Wetted Plastic End Plates:	PVC Thermoplastic

2] Piping

Maximum Pressure:	550 psi (Options for up to 1200 psi)
Pressure Piping:	316L Stainless Steel Tubing
Atmospheric Piping:	CPVC Schedule 80
Pipe Clamps:	Zero-Flex Victaulic Style 07 EPDM
On/Off Valves:	CPVC 3-piece ball valve
Flow Control Valves:	316 SS V-port ball valve
Positioners:	Promation P1.A Electric Quarter Turn
Check Valves:	CPVC ball check valve
Pneumatic Actuators:	None
Skid Pipe Terminations:	150 lb 316 SS Raised Face Flange
Flange Gaskets:	150 lb Garlock Blue Guard
Clean in Place Tank:	40 gallon PolyPro 15” Dia x 38” Height

3] Pump Specifications:

Feed Pump Type:	Grundfos 316SS Vertical Multi-stage Centrifugal
Feed Pump Motor:	Grundfos ML 3500 rpm 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:	100 Mesh 316 SS (Optional Felt Bag Filters)
Capacity:	30 GPM, 1 sqft
Elastomers (Seals):	EPDM (option for Viton)

5] Operating Site Conditions:

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

SPIRAL SYSTEM COMPONENT SPECIFICATIONS (continued)

6] Electrical Specifications:
(Note typically this is provided with a VSEP system, and the PLC/HMI is split with the spiral system. The controls are mounted on CIP 'Clean in Place' Skid that is also shared)

Controls Voltage:	120VAC, 1phase, 15A, 50/60Hz
Transformer Voltage:	480:120 500VA 60Hz
Enclosures:	Hoffman NEMA 4 Powdercoat Finish
Switches, Relays, & Contactors:	Allen Bradley 120 Volt
IO Link Masters and Hubs:	IFM Efector AL1122
Pressure Sensors:	IFM Efector PN-2292
Mag Flow Tube and Transmitter:	IFM Efector SM8000
Bag Filter DP Sensors:	None
Temperature Sensor:	IFM Efector TN-2511, UT0028
Level Sensors:	None
Conductivity Meter:	None
pH Meter:	None
Solenoid Valve:	None

Utility Summary									New Logic Research
VSEP System									
AIR COMPRESSOR SIZING INFORMATION									
	# of Valves		In^3 Air/stroke		Strokes/day		CFM		M3/hr
Spiral RO									
No Pneumatic Actuators									
System Air Totals					**System Totals**		**0.00**		**0**
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.									
HOT WATER SIZING INFORMATION									
	# /Day		Temp degC		Gallons/Day		GPM		M3/hr
Spiral RO									
Cleanings	0.14		45-50		84		0.06		0.0132
Rinse filter pack at 30gpm for 5mins	0.14		45-50		21		0.01		0.0033
Intermittent need of additional cleaning or flush of filter pack	0.033		45-50		4.95		0.00		0.0008
System Water Totals					**System Totals**		**0.08**		**0.0173**
Supply chlorine free water at >300 uS/cm									
Supply water at 45degC and 30gpm (6.8m3/hr)									
Supply water at 20 psi to 1.5" Hot Water flange connection on Spiral Skid									
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			
Spiral RO Feed Pump	1	5		8.1		7.0		15	
Spiral RO Feed Pump	1	15		19.5		18.0		40	
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 HP		Nameplate Current		Nameplate Current		Recommended CB Sizing	
				220V		120V			
Main Control Enclosures	0	NA		10		8.0		20	
Supply 24VDC power over IO Link to Master from VSEP or CIP skids .									
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.									