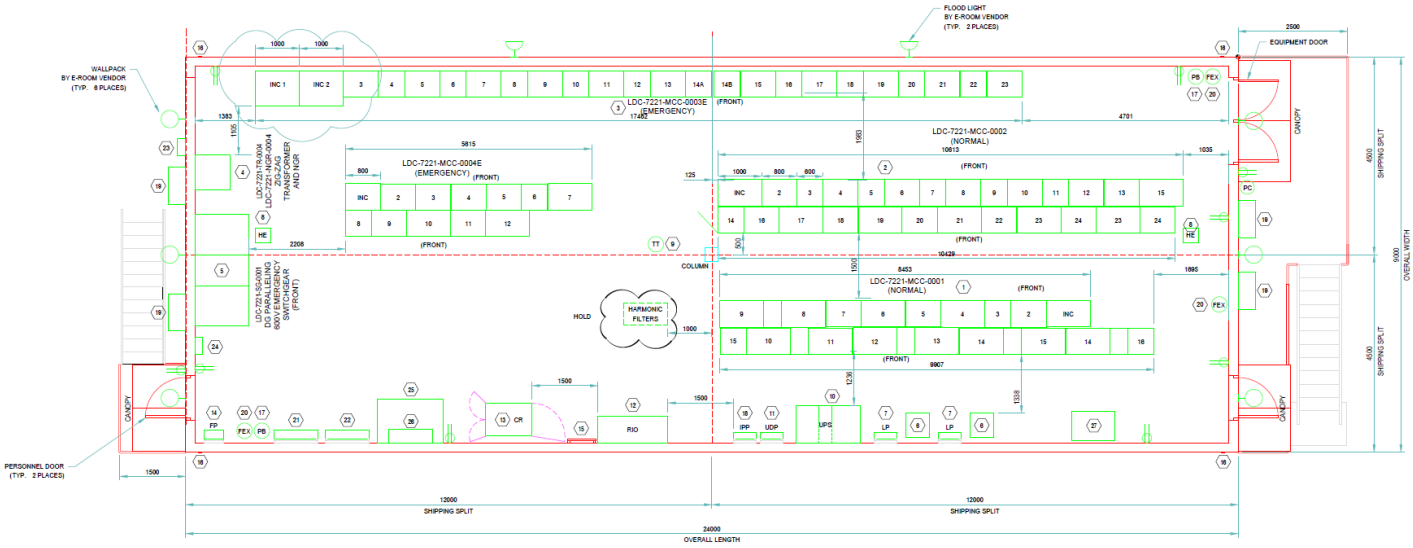
LNR VJ Pamensky WEG Dry Creek **Water Treatment Project** MCPs - Sparwood, BC Canada

Location of installation: **Dry Creek Water Treatment Project** Open-Pit Coal Mine

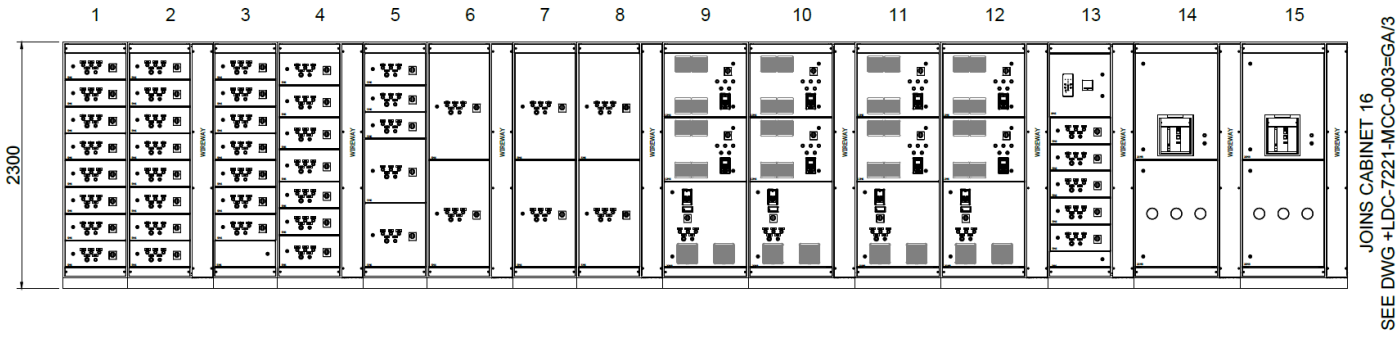
Largest Ampacity MCP – **3000A** 600V SCCR 50kA

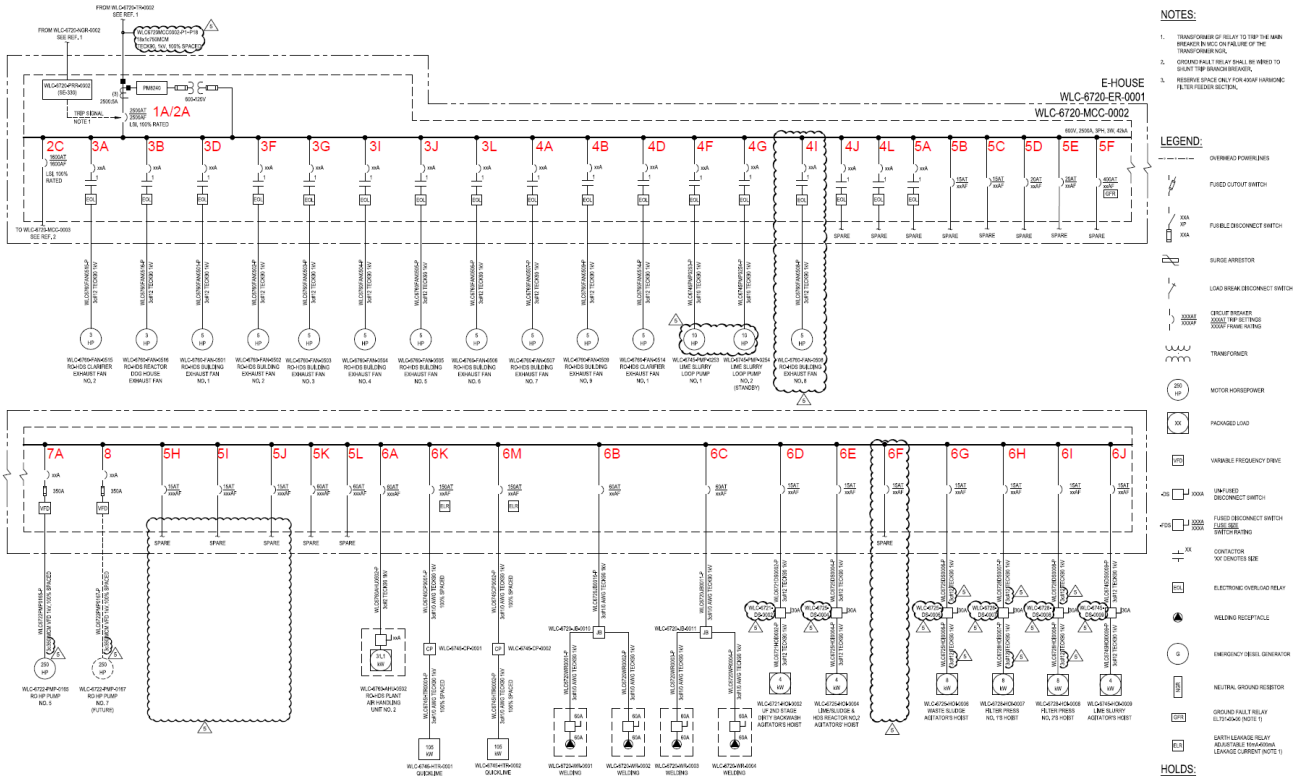
Project budget: **$6.5M** - "Line Creek Operations Phase II"

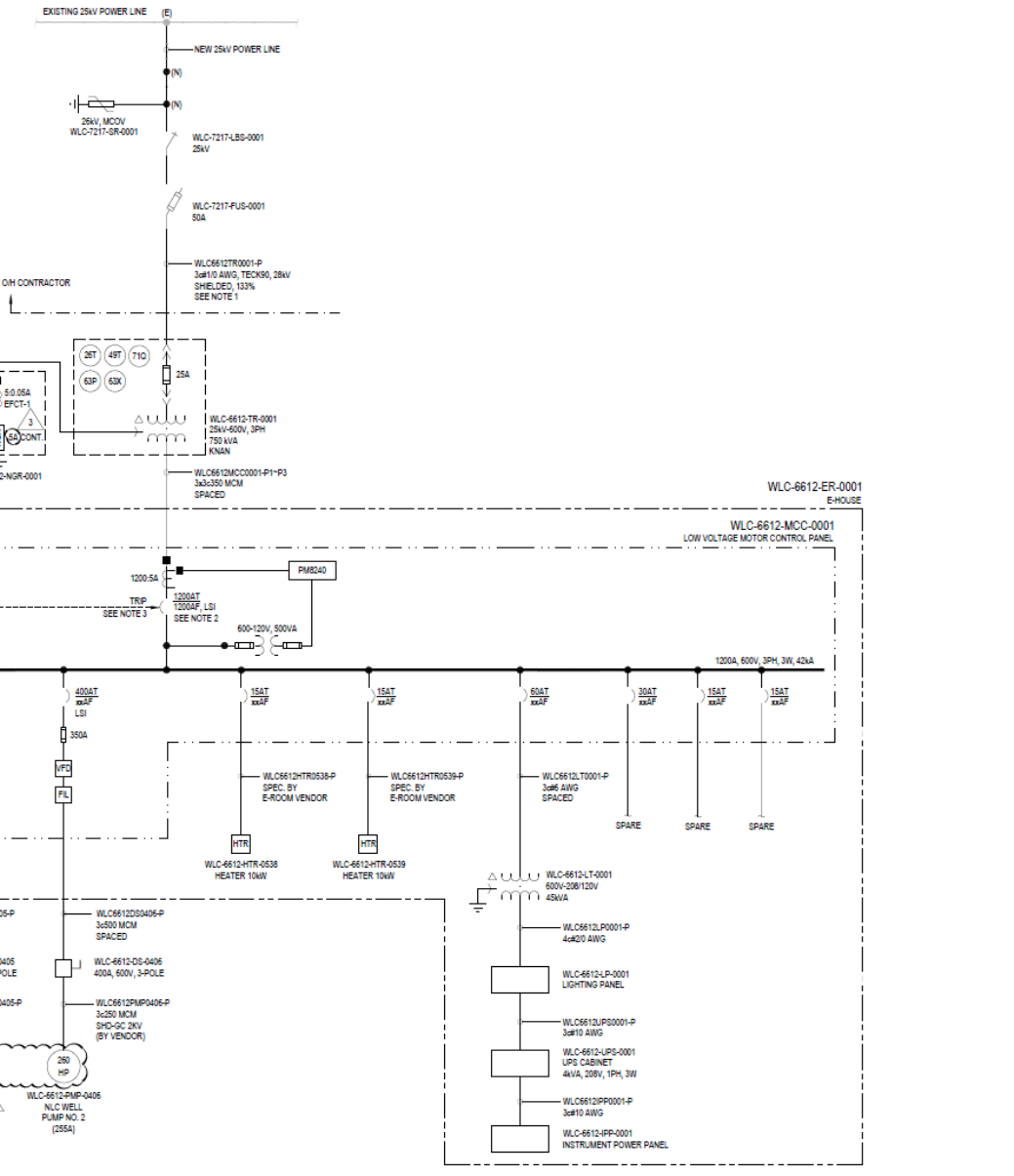
Client: TECK Coal Limited Line Creek Operations



1 TO 15 FRONT VIEW




NOTES:
1. TRANSFORMER GF RELAY TO TRIP THE MAIN BREAKER IN MCC ON FAILURE OF THE TRANSFORMER NGR.
2. GROUND FAULT RELAY SHALL BE WIRED TO SHUNT TRIP BRANCH BREAKER.
3. RESERVE SPACE ONLY FOR 400AF HARMONIC FILTER FEEDER SECTION.
E-HOUSE
WLC-6720-ER-0001
WLC-6720-MCC-0002
LEGEND:
OVERHEAD POWERLINES
FUSED CUTOUT SWITCH
FUSIBLE DISCONNECT SWITCH
SURGE ARRESTOR
LOAD BREAK DISCONNECT SWITCH
CIRCUIT BREAKER
TRANSFORMER
MOTOR HORSEPOWER
PACKAGED LOAD
VARIABLE FREQUENCY DRIVE
UNFUSED DISCONNECT SWITCH
FUSED DISCONNECT SWITCH
CONTACTOR
ELECTRONIC OVERLOAD RELAY
WELDING RECEPTACLE
EMERGENCY DIESEL GENERATOR
NEUTRAL GROUND RESISTOR
GROUND FAULT RELAY
EARTH LEAKAGE RELAY
HOLDS:

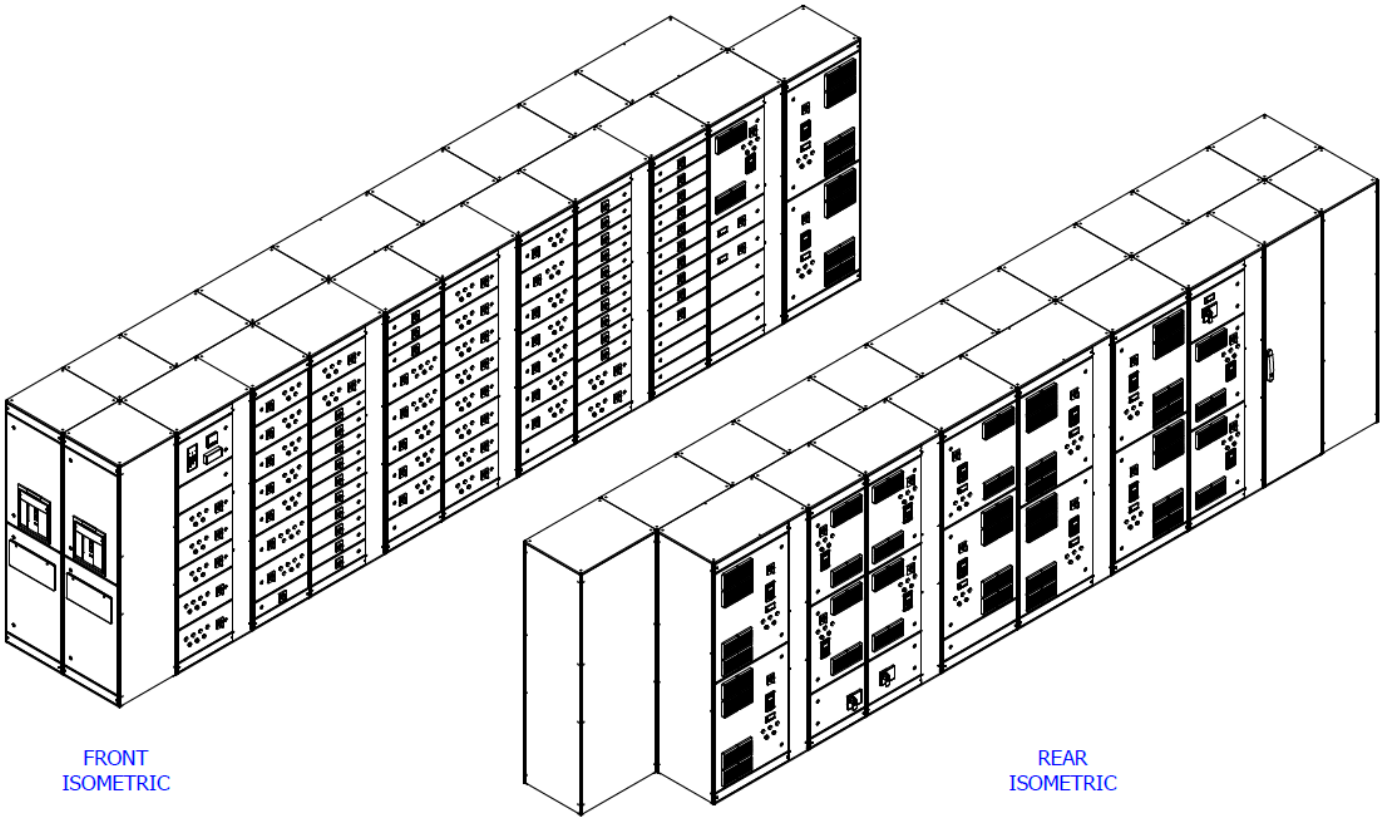

EXISTING 25kV POWER LINE
NEW 25kV POWER LINE
26kV, MOOV
WLC-7217-SR-0001
WLC-7217-LBS-0001
25kV
WLC-7217-FUS-0001
50A
WLC6612TR0001-P
3c#1/0 AWG, TECK90, 28kV
SHIELDED, 133%
SEE NOTE 1
BY O/H CONTRACTOR
WLC-6612-TR-0001
25kV-600V, 3PH
750 kVA
KNAN
WLC-6612-NGR-0001
WLC6612MCC0001-P1~P3
3x3c350 MCM
SPACED
WLC-6612-ER-0001
E-HOUSE
WLC-6612-MCC-0001
LOW VOLTAGE MOTOR CONTROL PANEL
GROUND FAULT RELAY
WLC-6612-PRR-0001
(SE-330)
TRIP
SEE NOTE 3
1200A
1200AT
1200AF, LSI
SEE NOTE 2
PM8240
600-120V, 500VA
1200A, 600V, 3PH, 3W, 42kA
400AT
xxAF
LSI
350A
VFD
FIL
15AT
xxAF
60AT
xxAF
30AT
xxAF
WLC6612HTR0538-P
SPEC. BY
E-ROOM VENDOR
WLC6612HTR0539-P
SPEC. BY
E-ROOM VENDOR
WLC6612LT0001-P
3c#6 AWG
SPACED
SPARE
HTR
WLC-6612-HTR-0538
HEATER 10kW
WLC-6612-HTR-0539
HEATER 10kW
WLC-6612-LT-0001
600V-208/120V
45kVA
WLC6612DS0405-P
3c500 MCM
SPACED
WLC-6612-DS-0405
400A, 600V, 3-POLE
WLC6612PMP0405-P
3c250 MCM
SHD-GC 2KV
(BY VENDOR)
WLC6612DS0406-P
3c500 MCM
SPACED
WLC-6612-DS-0406
400A, 600V, 3-POLE
WLC6612PMP0406-P
3c250 MCM
SHD-GC 2KV
(BY VENDOR)
260 HP
WLC-6612-PMP-0405
NLC WELL
PUMP NO.1
(255A)
WLC-6612-PMP-0406
NLC WELL
PUMP NO. 2
(255A)
WLC6612LP0001-P
4c#2/0 AWG
WLC-6612-LP-0001
LIGHTING PANEL
WLC6612UPS0001-P
3c#10 AWG
WLC-6612-UPS-0001
UPS CABINET
4kVA, 208V, 1PH, 3W
WLC6612IPP0001-P
3c#10 AWG
WLC-6612-IPP-0001
INSTRUMENT POWER PANEL

LV **Motor Control Panels** and **Distribution Panels** - Sparwood, BC Canada

Location of installation: **Line Creek Operations** Open-Pit Coal Mine

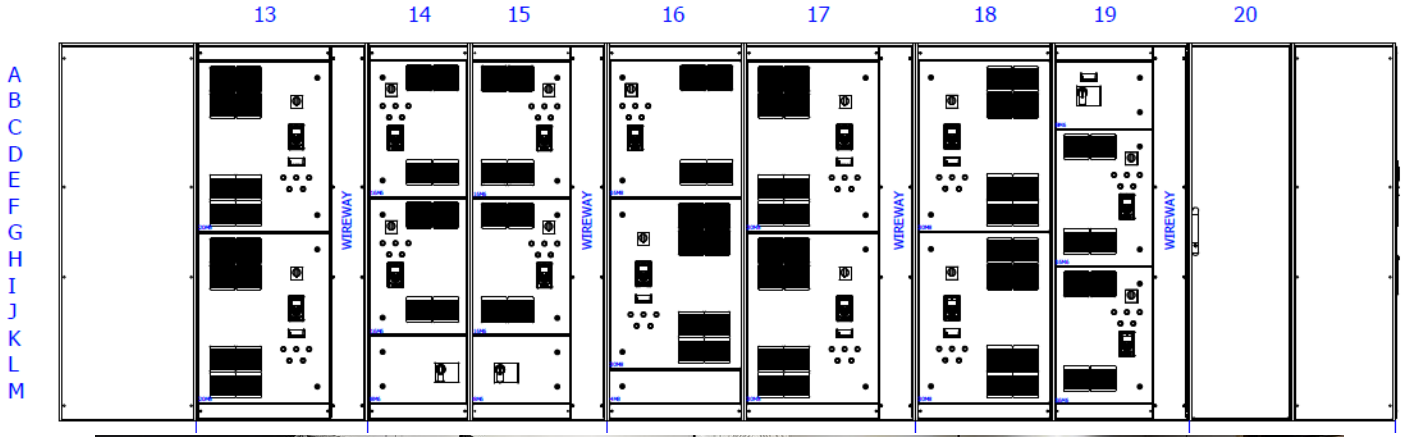
Largest Ampacity MCP – **3000A** 600V SCCR 50kA

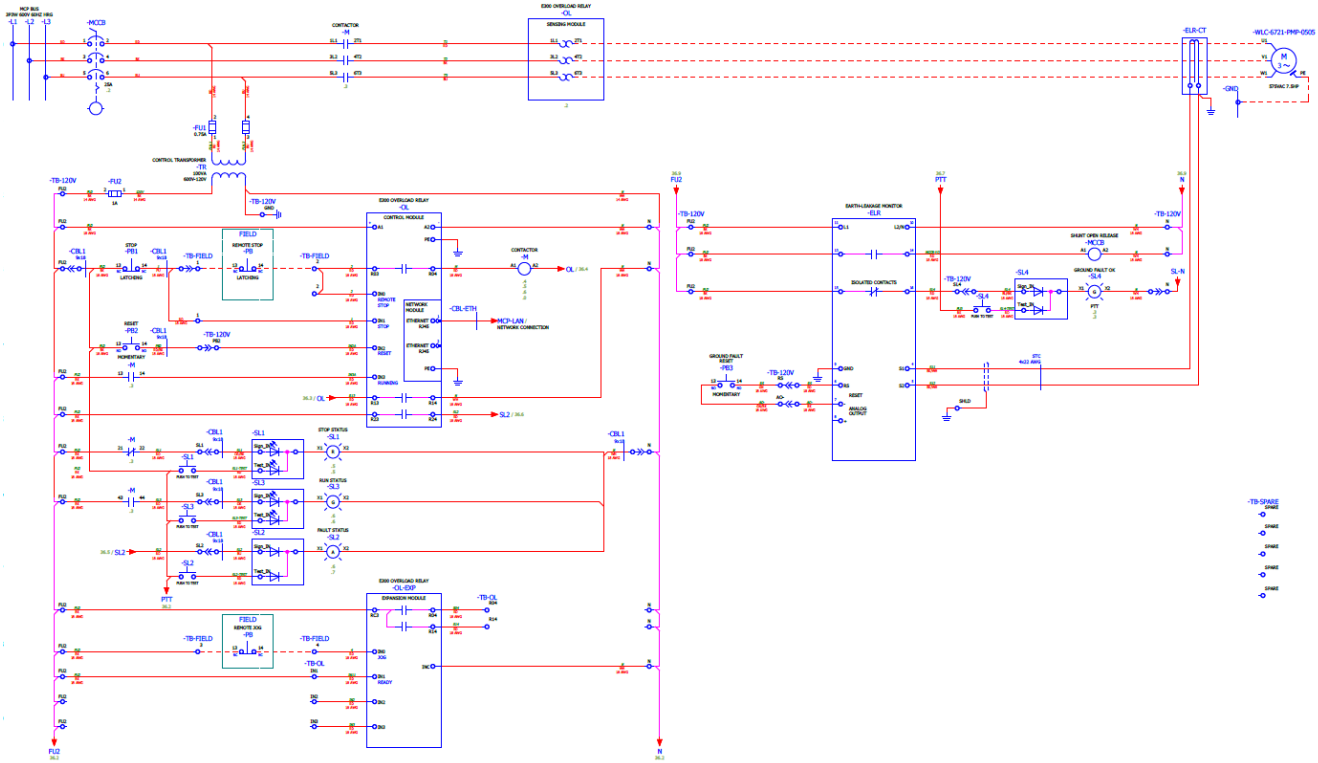
Project budget: **$5.3M** - "Line Creek Water Quality Management Project"



FRONT ISOMETRIC

REAR ISOMETRIC


13
14
15
16
17
18
19
20
A
B
C
D
E
F
G
H
I
J
K
L
M
WIREWAY
WIREWAY
WIREWAY
WIREWAY



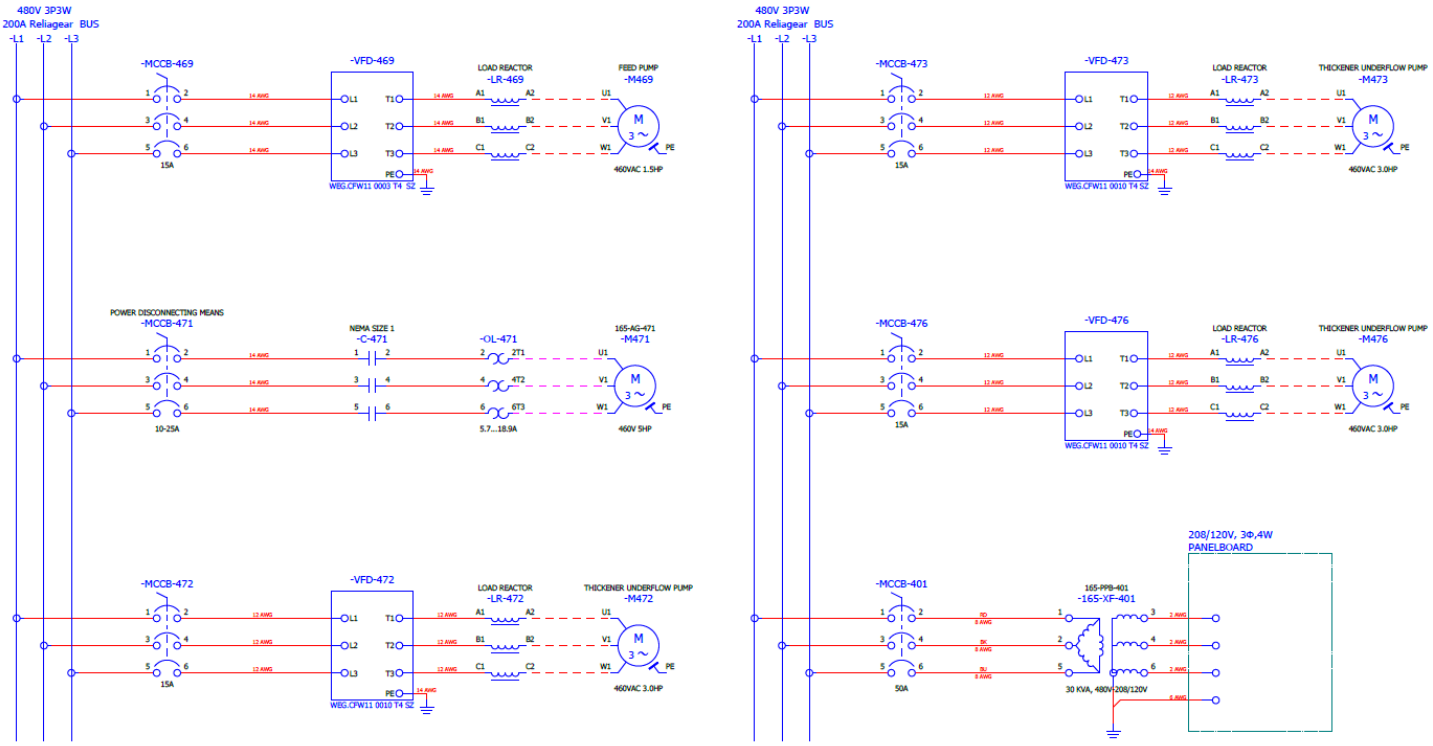

SPARE
STOP
RUN STATUS
FAULT STATUS
RESET

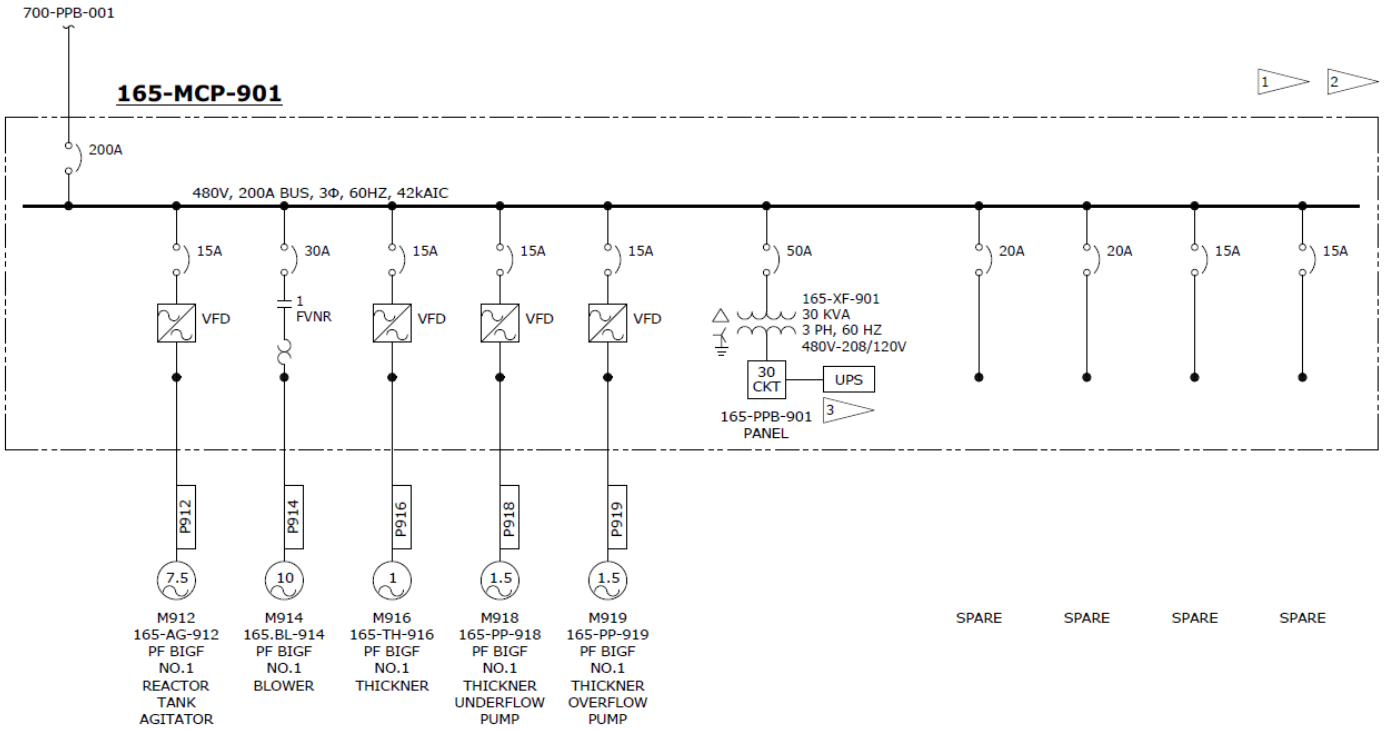
LV **Motor Control Panels** NEMA 3R - Johnson, Arizona USA

Location of installation: **NUTON** / A Rio Tinto venture, Arizona USA

Largest Ampacity MCP – **1200A** 480V SCCR 42kA

Project budget: **$1.7M**

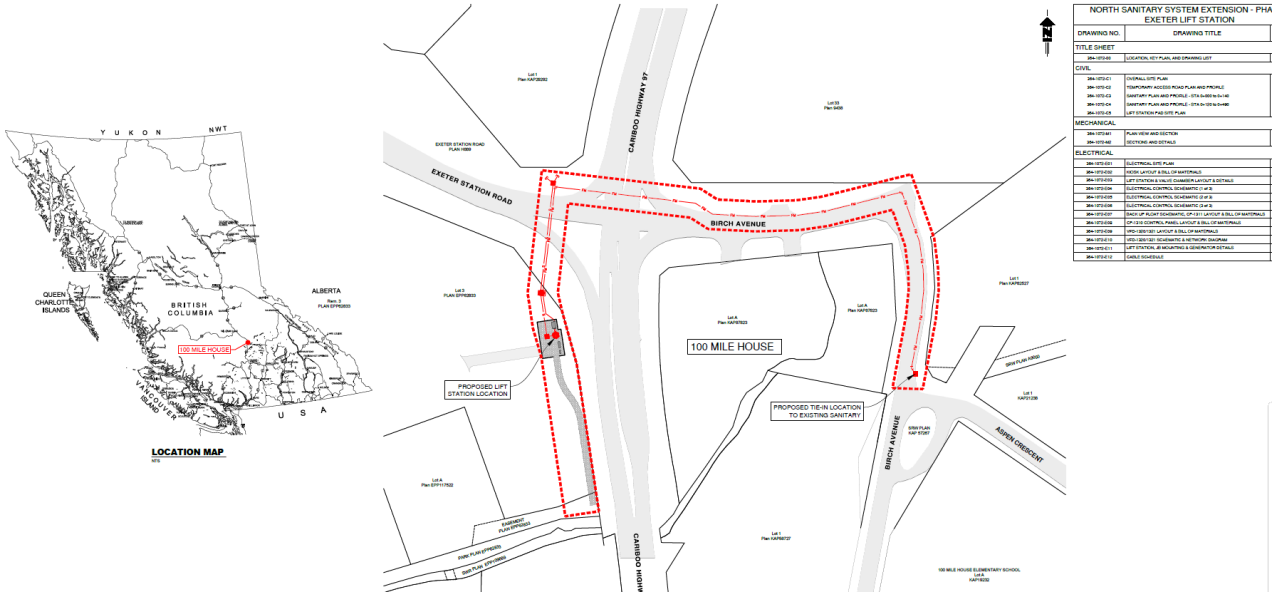


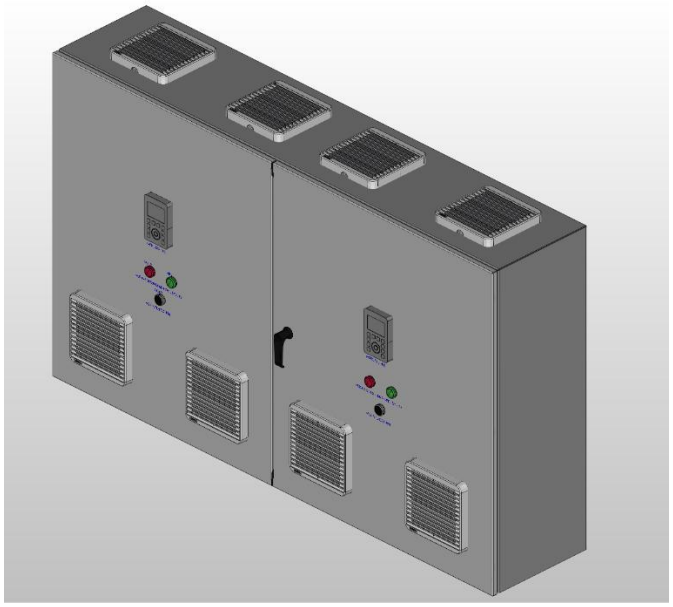


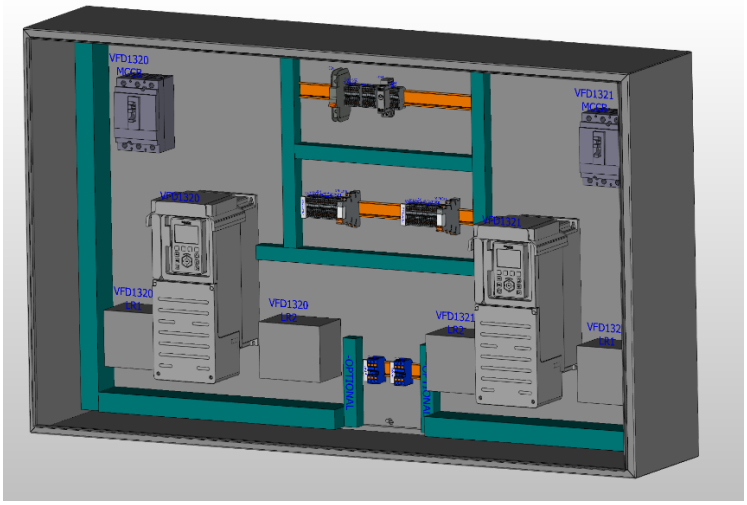
Exeter/Sanitary **Lift Station**, 100 Mile House BC Canada

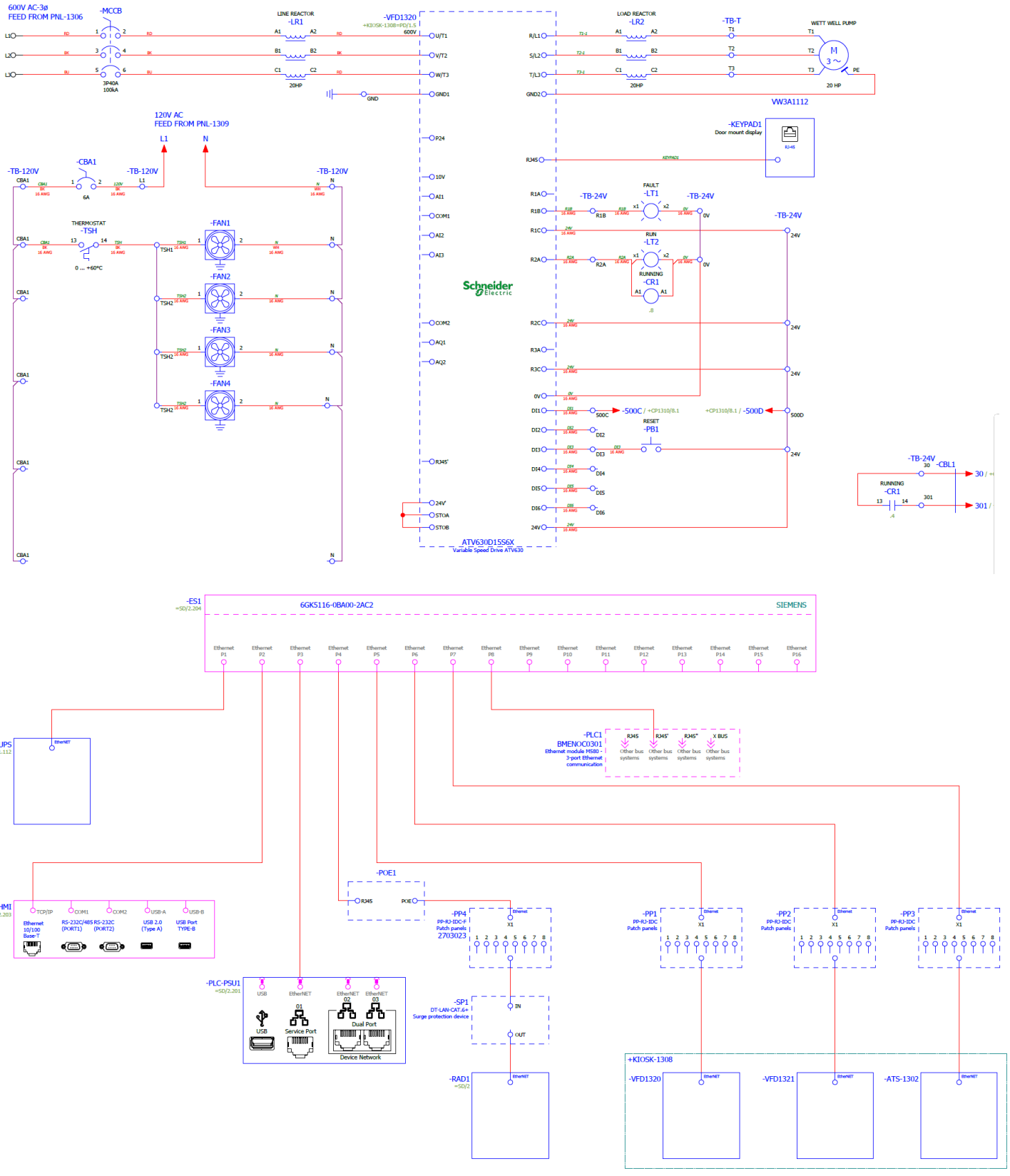
Location of installation: North Sanitary System Extension, 100 Mile House, BC Canada
Client: 100 Mile House Municipality

NORTH SANITARY SYSTEM EXTENSION - PHASE 1
EXETER LIFT STATION



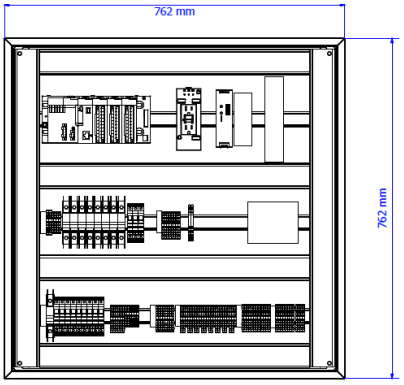


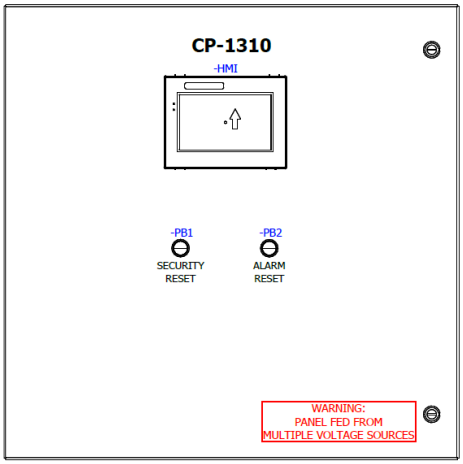


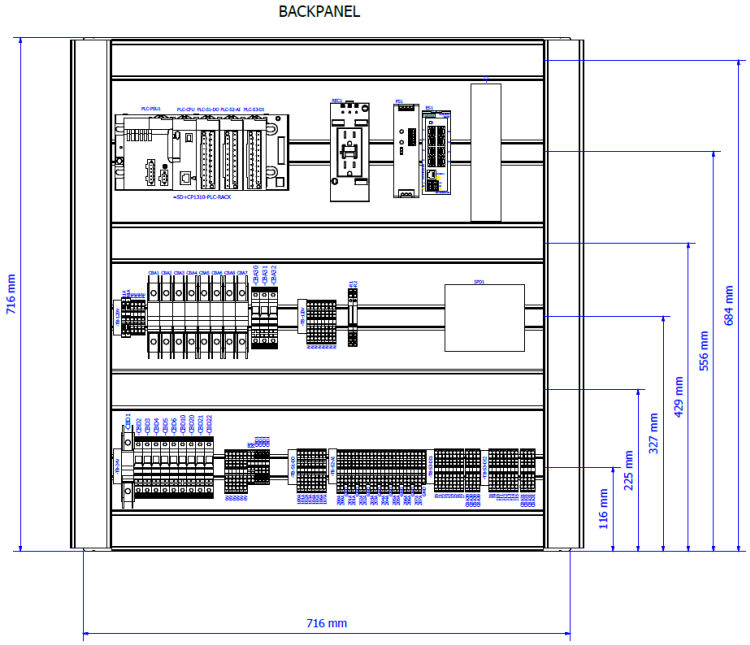

600V AC-3ø
FEED FROM PNL-1306
-MCCB
3P40A
100kA
LINE REACTOR
-LR1
20HP
-VFD1320
+KIOSK-1308=PD/1.5
600V
GND
LOAD REACTOR
-LR2
20HP
-TB-T
WETT WELL PUMP
M
3 ~
20 HP
VW3A1112
120V AC
FEED FROM PNL-1309
L1
N
-CBA1
6A
-TB-120V
THERMOSTAT
-TSH
0 ... +60°C
-FAN1
-FAN2
-FAN3
-FAN4
-KEYPAD1
Door mount display
-TB-24V
FAULT
-LT1
RUN
-LT2
RUNNING
-CR1
RESET
-PB1
-500C / +CP1310/8.1
+CP1310/8.1 / -500D
-CBL1
Schneider Electric
ATV630D15S6X
Variable Speed Drive ATV630
-ES1
=SD/2.204
6GK5116-0BA00-2AC2
SIEMENS
-UPS
=SD/1.112
-PLC1
BMENOC0301
Ethernet module M580 - 3-port Ethernet communication
-POE1
-HMI
=SD/2.203
-PP4
PP-RJ-IDC-F Patch panels Z703023
-PP1
PP-RJ-IDC Patch panels
-PP2
PP-RJ-IDC Patch panels
-PP3
PP-RJ-IDC Patch panels
-PLC-PSU1
=SD/2.201
-SP1
DT-LAN-CAT.6+ Surge protection device
-RAD1
=SD/2
+KIOSK-1308
-VFD1320
-VFD1321
-ATS-1302

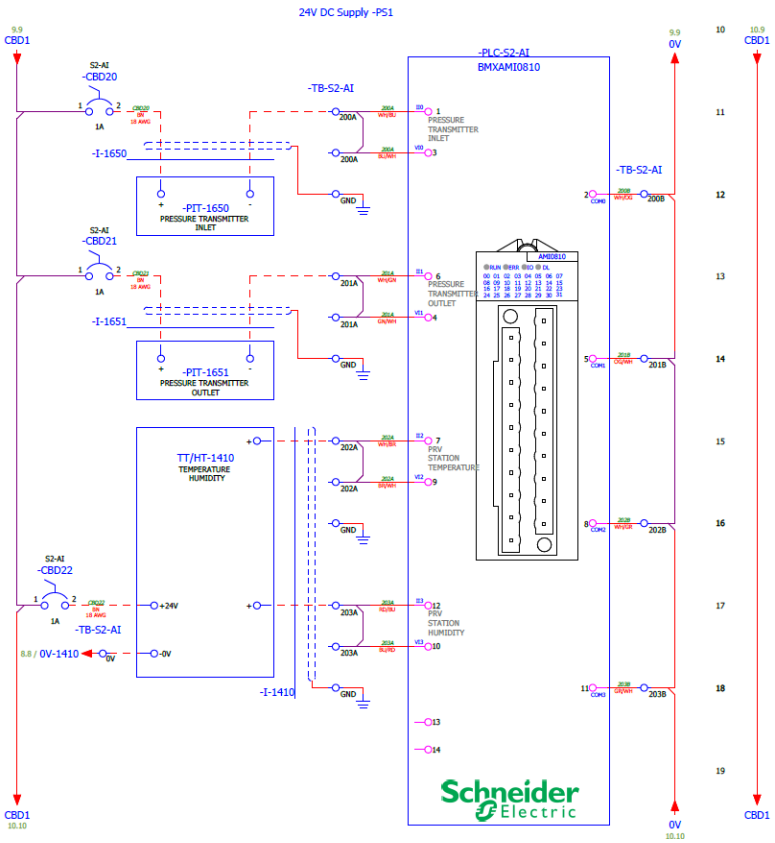
SWS **Water Treatment**, Kamloops BC Canada

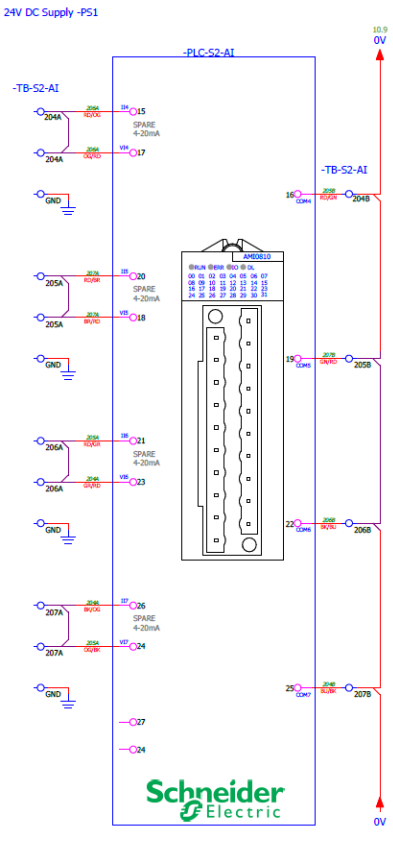
Location of installation: **SW Sector** Industrial Area Water Servicing, Kamloops, BC Canada
Client: WESTCANA Electric Inc./ City of Kamloops





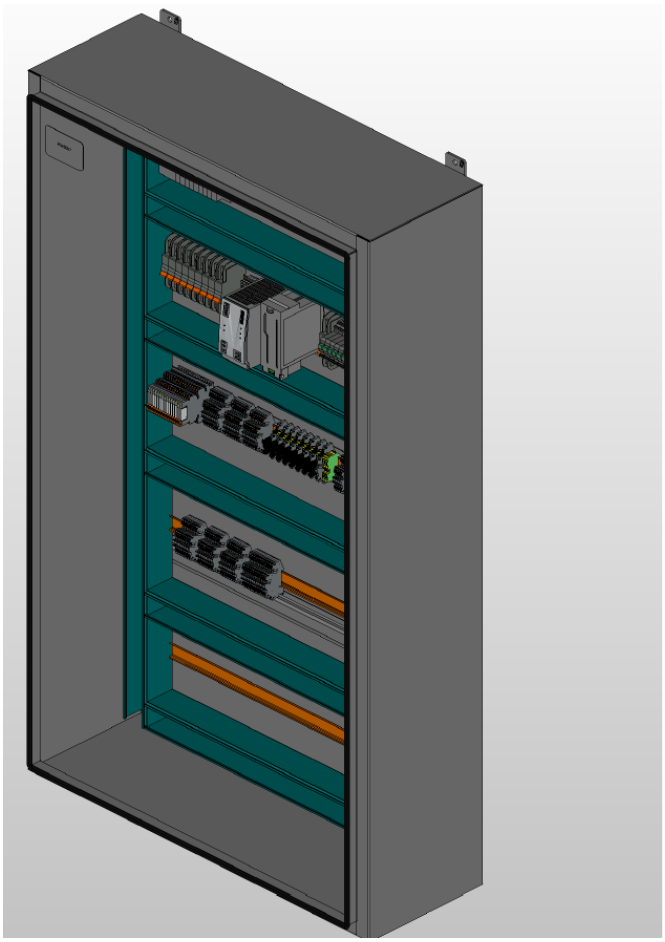


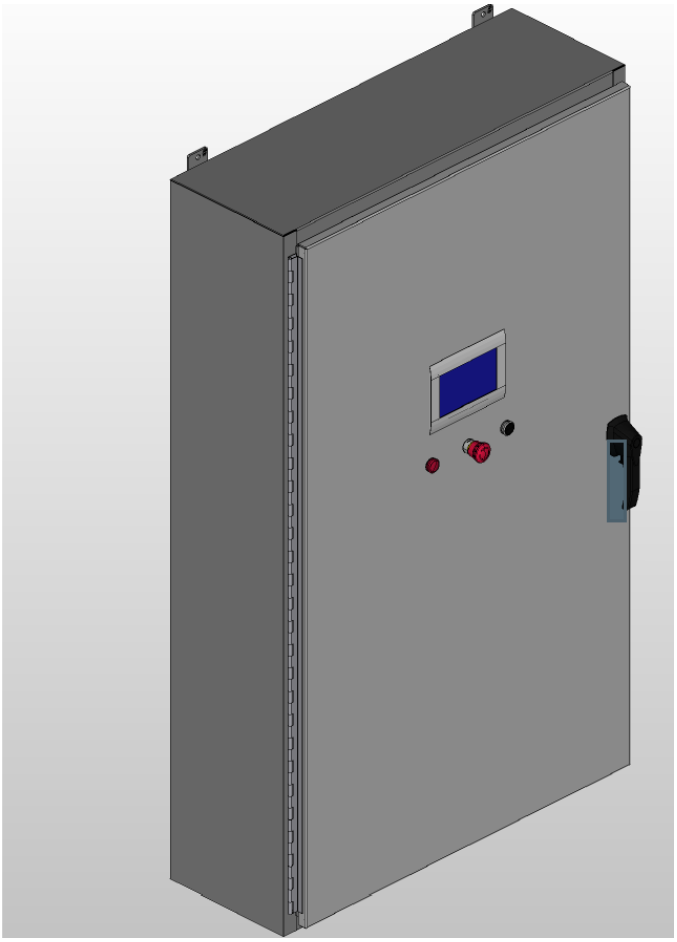


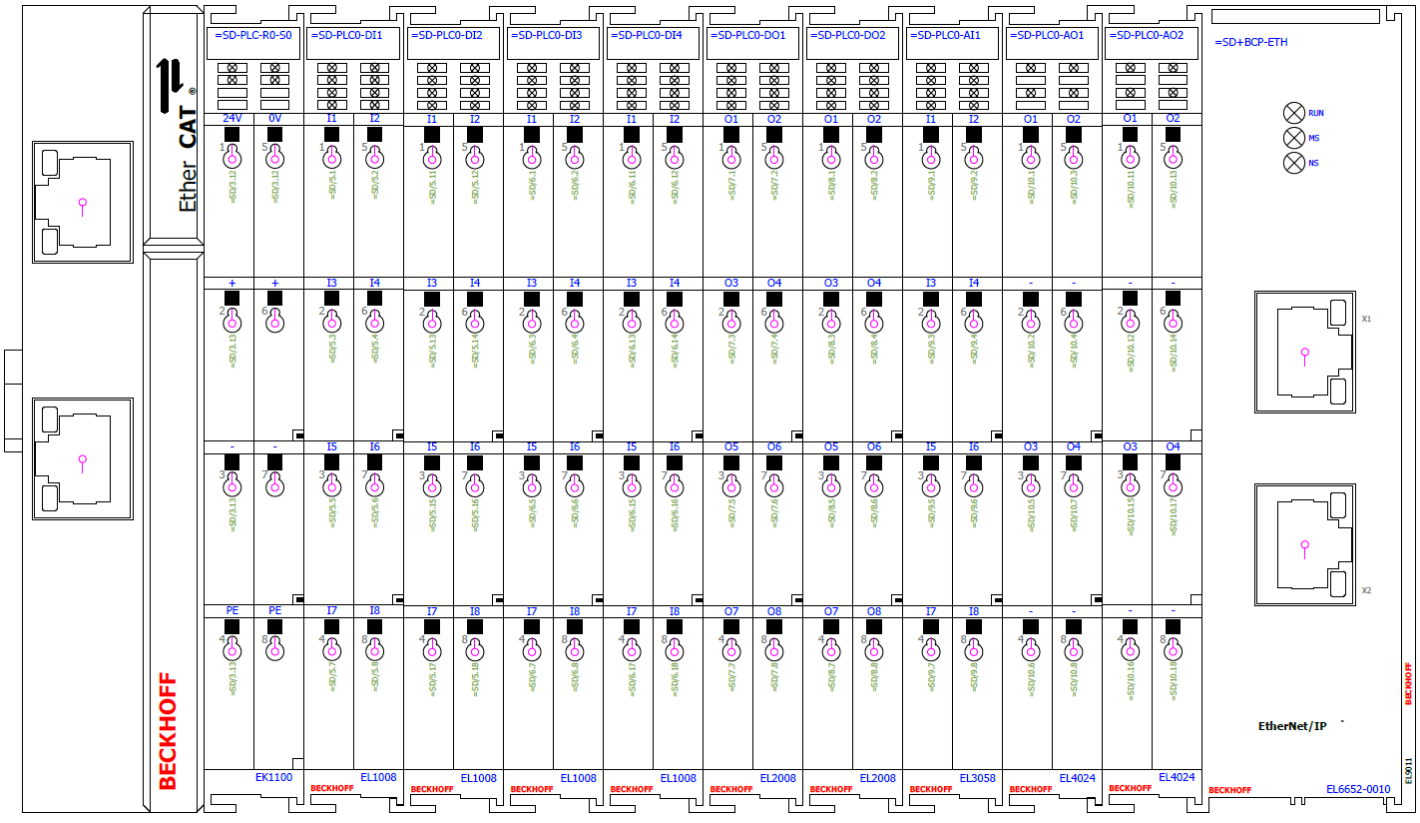


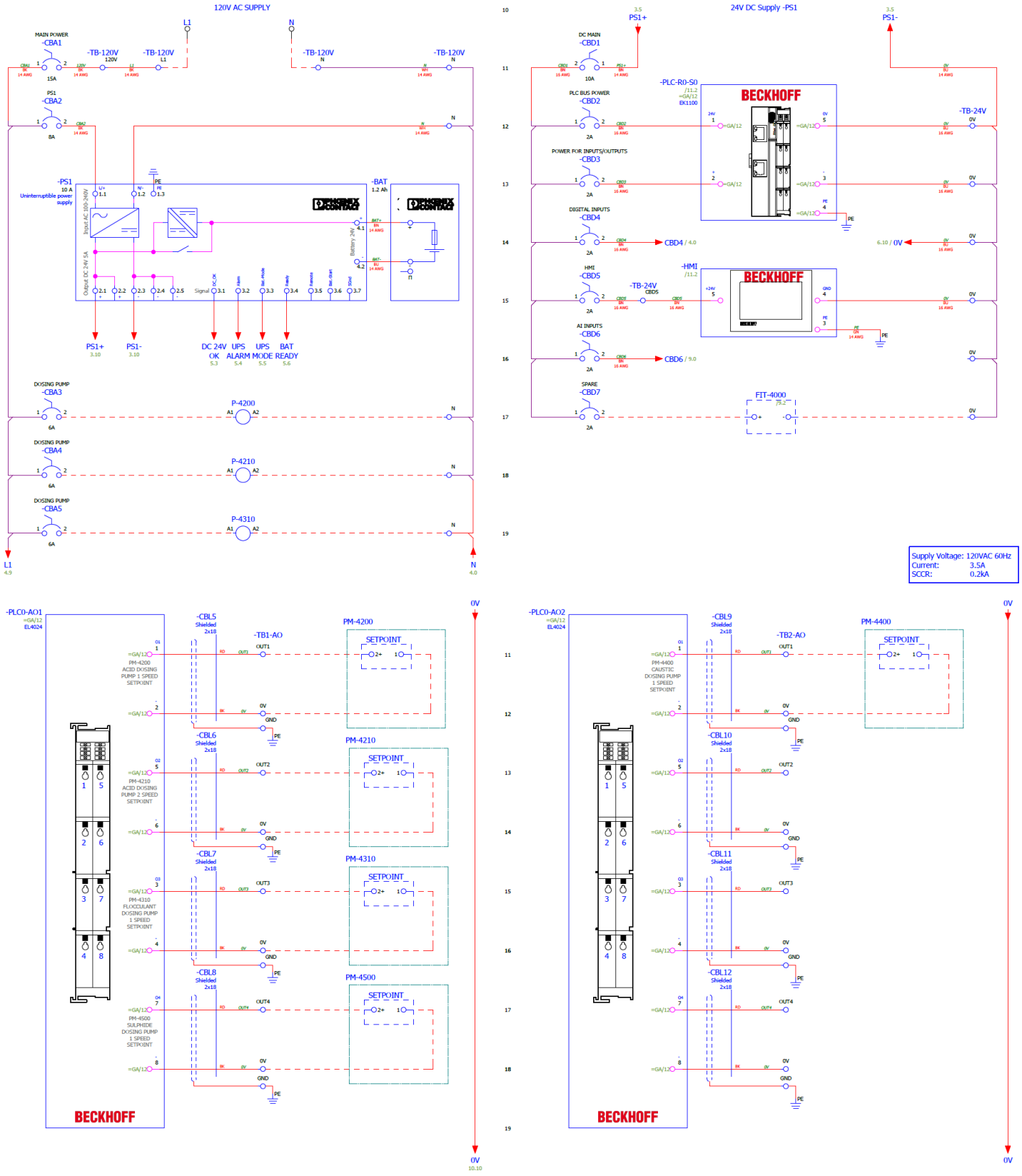
Barium Dosing Control Panel, Barkerville BC Canada

Location of installation: **Gold Mine**, Barkerville, BC Canada
Client: Barkerville Gold Mines LTD.



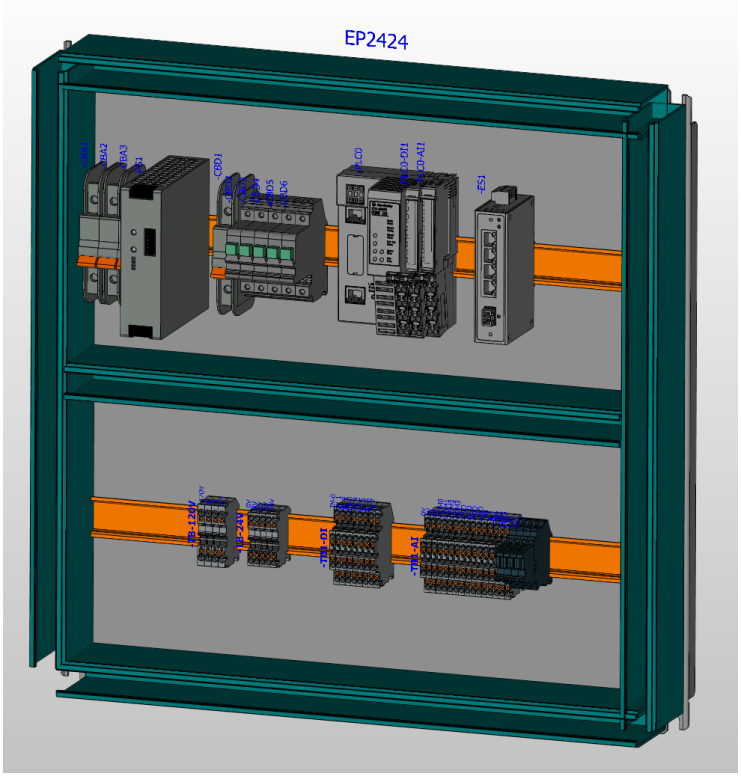


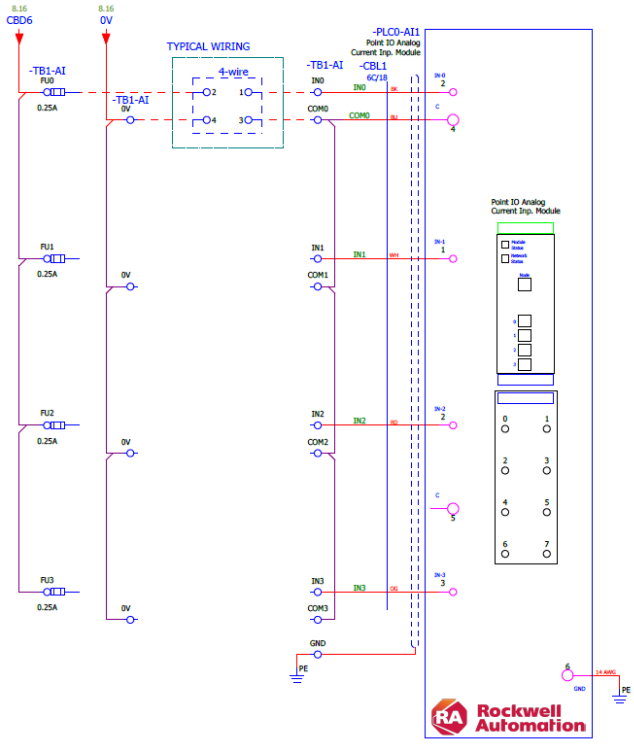


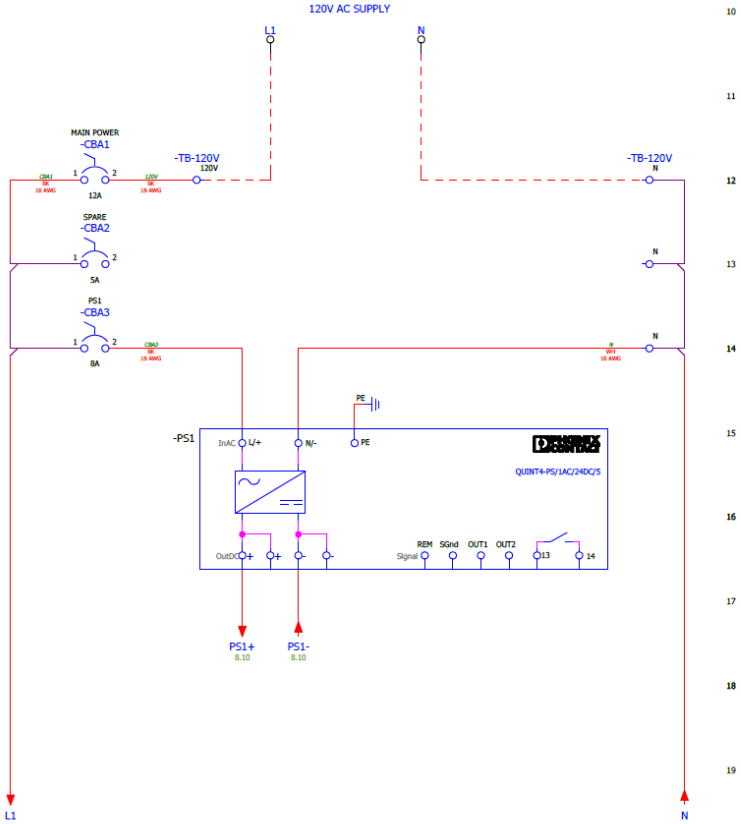

120V AC SUPPLY
MAIN POWER
-CBA1
15A
-TB-120V
120V
L1
N
PS1
-CBA2
8A
-PS1
10 A
Uninterruptible power supply
Input AC 100-240V
Output DC 24V 5A
-BAT
1.2 Ah
Battery 24V
PS1+
3.10
PS1-
3.10
DC 24V OK
5.3
UPS ALARM
5.4
UPS MODE
5.5
BAT READY
5.6
DOSING PUMP
-CBA3
6A
P-4200
-CBA4
P-4210
-CBA5
P-4310
L1
4.9
N
4.0
24V DC Supply -PS1
PS1+
PS1-
DC MAIN
-CBD1
10A
PLC BUS POWER
-CBD2
2A
POWER FOR INPUTS/OUTPUTS
-CBD3
DIGITAL INPUTS
-CBD4
CBD4 / 4.0
HMI
-CBD5
AI INPUTS
-CBD6
CBD6 / 9.0
SPARE
-CBD7
-PLC-R0-S0
EK1100
BECKHOFF
-TB-24V
6.10 / 0V
-HMI
FIT-4000
Supply Voltage: 120VAC 60Hz
Current: 3.5A
SCCR: 0.2kA
-PLC0-AO1
EL4024
-CBL5
Shielded 2x18
-TB1-AO
PM-4200
SETPOINT
PM-4200 ACID DOSING PUMP 1 SPEED SETPOINT
-CBL6
PM-4210
PM-4210 ACID DOSING PUMP 2 SPEED SETPOINT
-CBL7
PM-4310
PM-4310 FLOCCULANT DOSING PUMP 1 SPEED SETPOINT
-CBL8
PM-4500
PM-4500 SULPHIDE DOSING PUMP 1 SPEED SETPOINT
0V
10.10
-PLC0-AO2
EL4024
-CBL9
-TB2-AO
PM-4400
PM-4400 CAUSTIC DOSING PUMP 1 SPEED SETPOINT
-CBL10
-CBL11
-CBL12

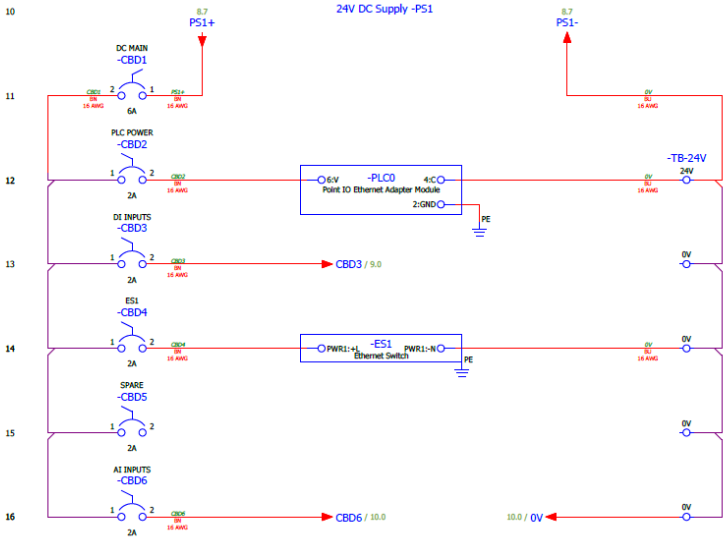
EVR **Remote IO** Panel, Elkford BC Canada

Location of installation: **Line Creek Operations**, Elkford, BC Canada
Client: EVR A Glencore Company





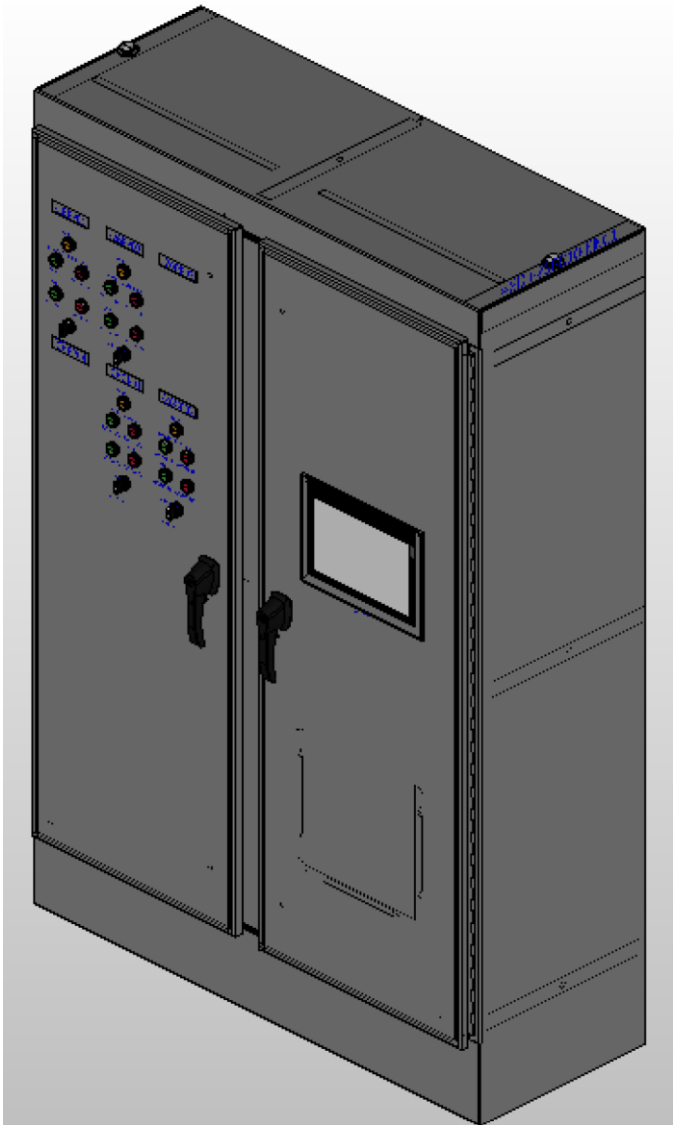


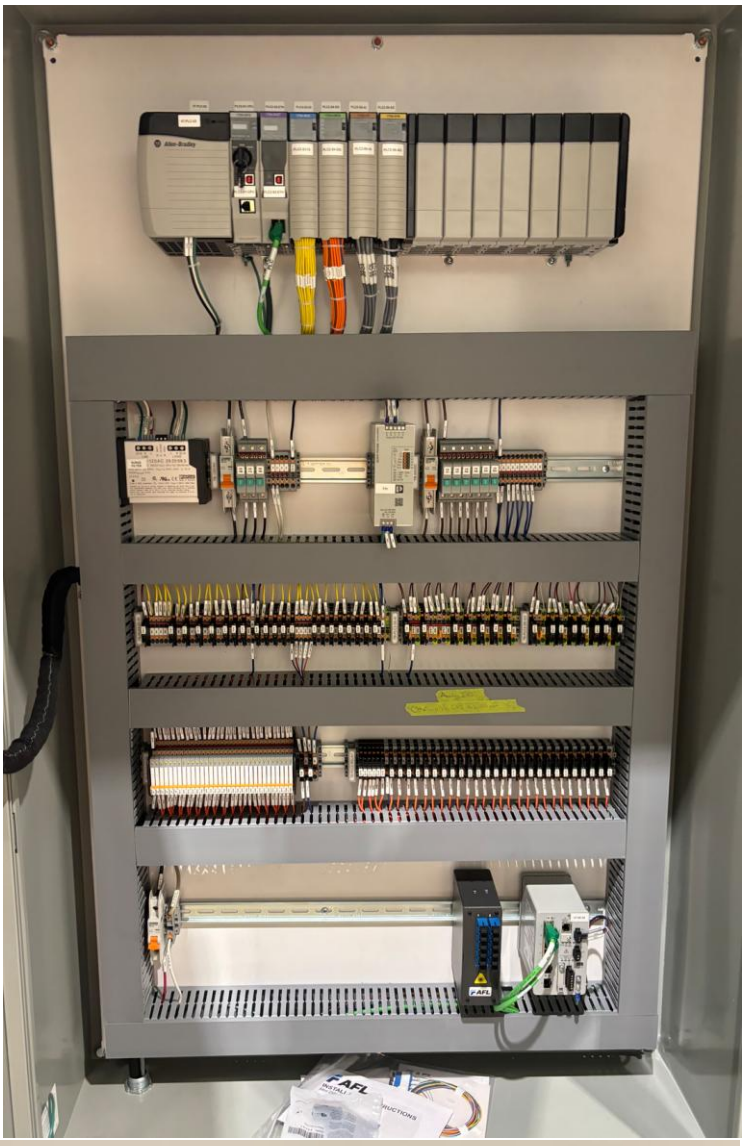


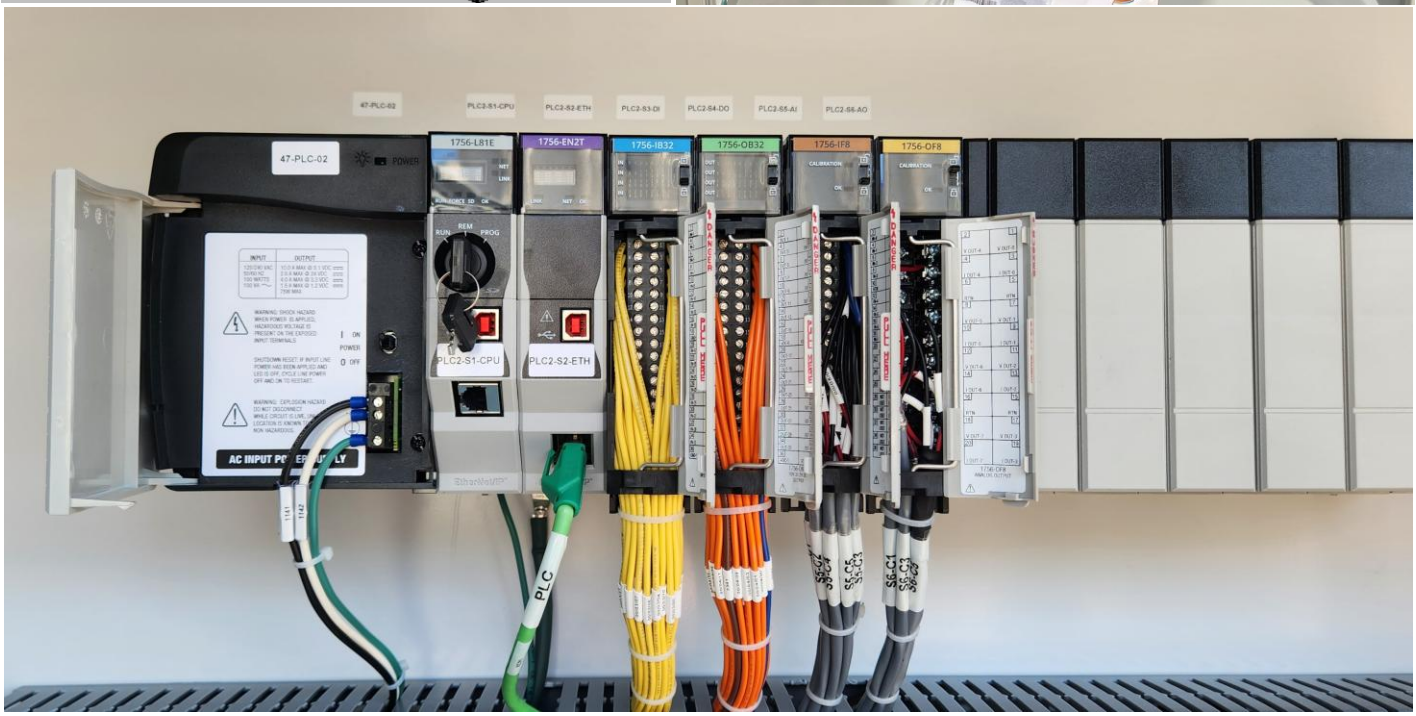
Supply Voltage: 120VAC 60Hz
Current: 3.5A
SCCR: 0.2kA

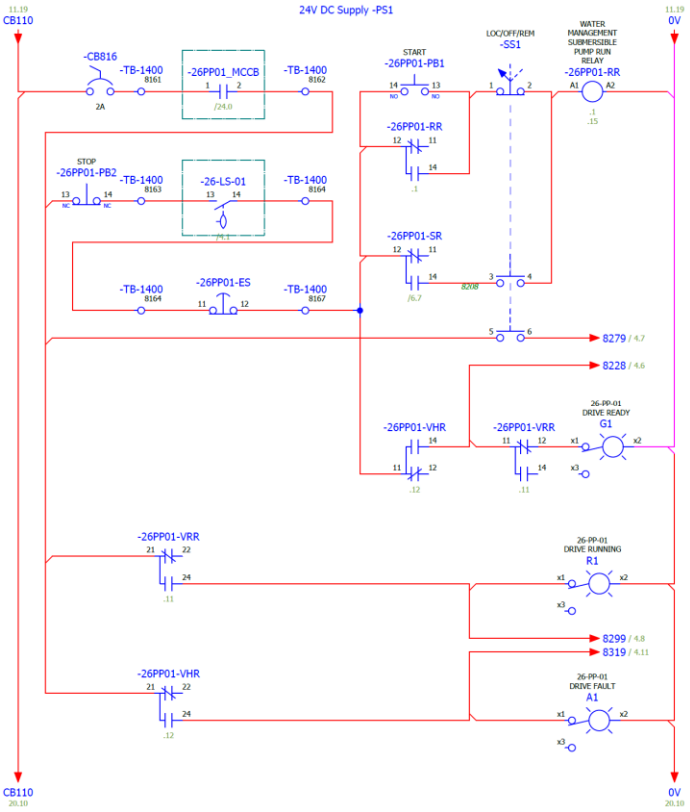
WMP Discharge **PLC System –** BC, Canada

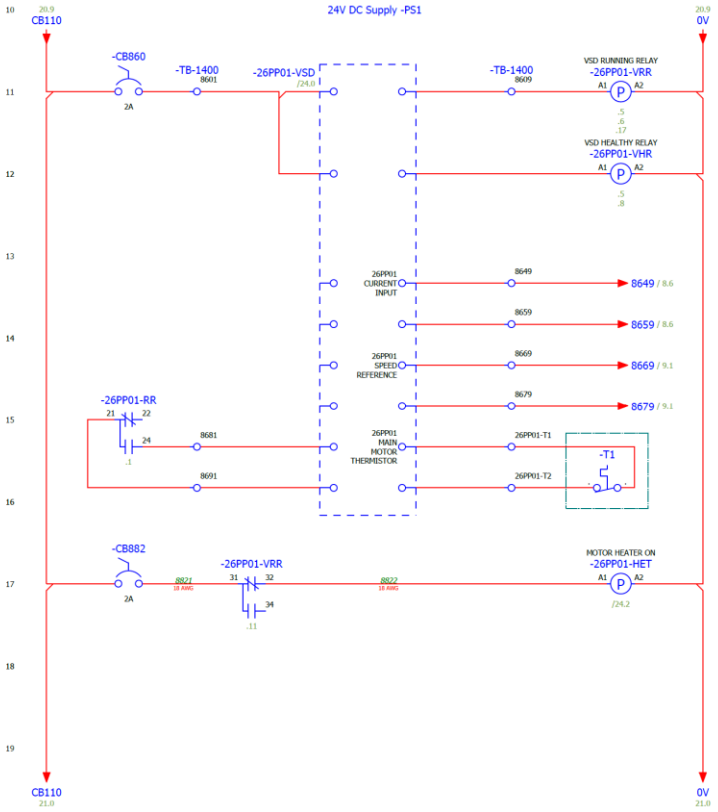
Location of installation: Blackwater Gold Mine, BC, Canada
Client: Artemis Gold Inc
[Blackwater Gold Mine]

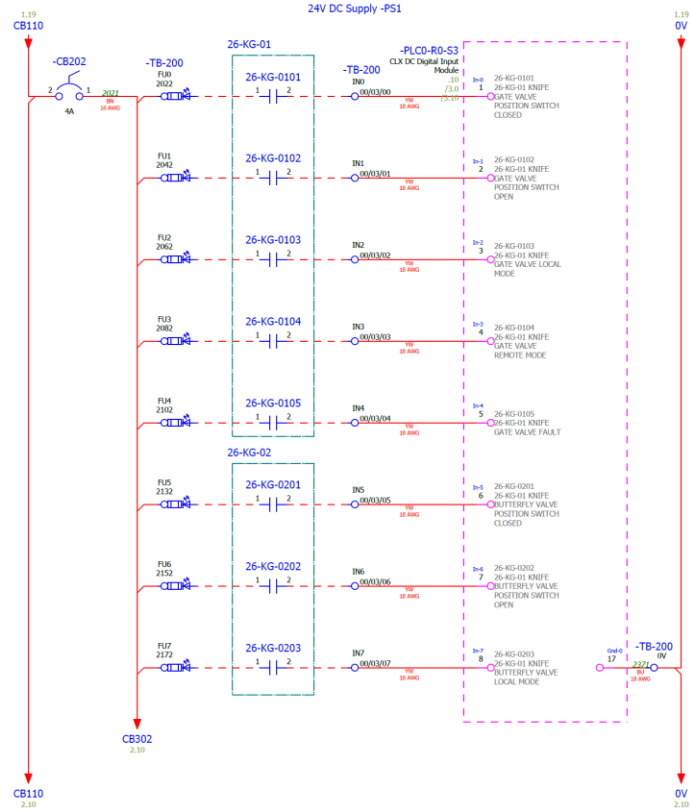


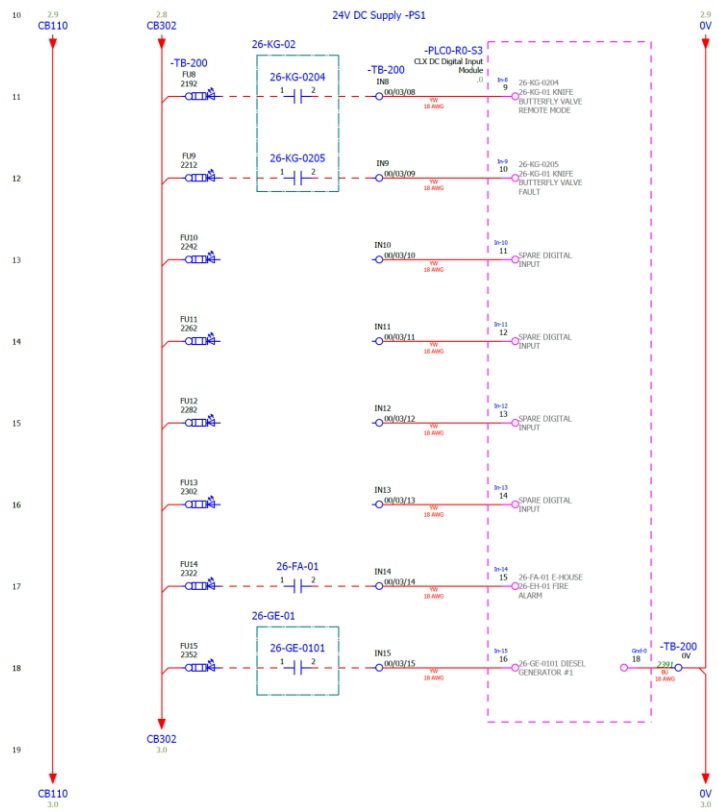





24V DC Supply -PS1
CB110
0V
-CB816
-TB-1400
-26PP01_MCCB
-26PP01-PB1
START
LOC/OFF/REM
-SS1
WATER MANAGEMENT SUBMERSIBLE PUMP RUN RELAY
-26PP01-RR
STOP
-26PP01-PB2
-26-LS-01
-26PP01-RR
-26PP01-SR
-TB-1400
-26PP01-ES
8279 / 4.7
8228 / 4.6
-26PP01-VHR
-26PP01-VRR
26-PP-01 DRIVE READY
G1
-26PP01-VRR
26-PP-01 DRIVE RUNNING
R1
8299 / 4.8
8319 / 4.11
-26PP01-VHR
26-PP-01 DRIVE FAULT
A1

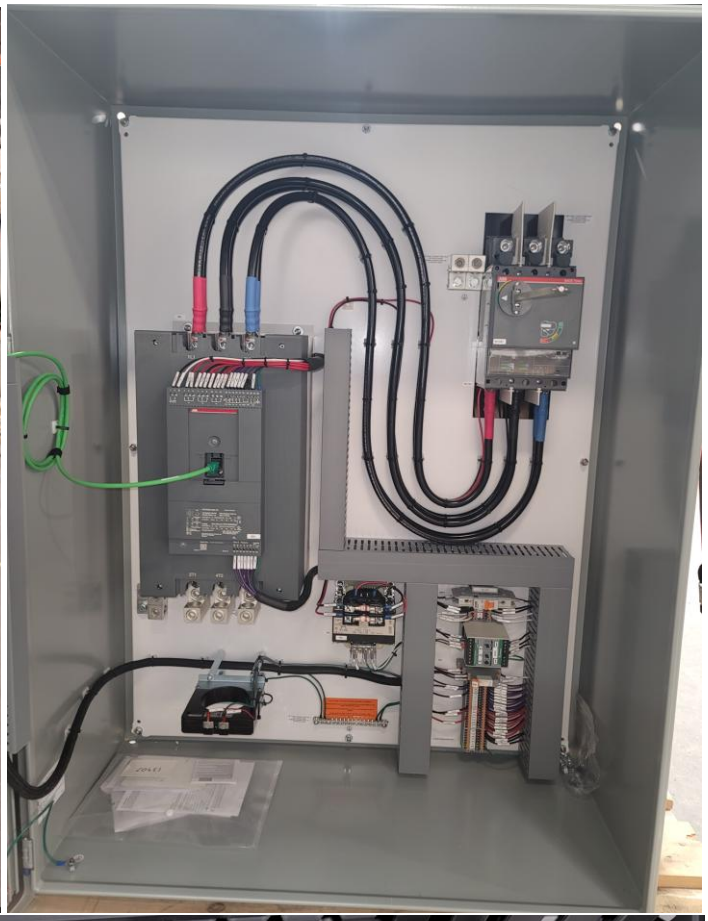

24V DC Supply -PS1
CB110
0V
-CB860
-TB-1400
-26PP01-VSD
VSD RUNNING RELAY
-26PP01-VRR
VSD HEALTHY RELAY
-26PP01-VHR
26PP01 CURRENT INPUT
8649 / 8.6
8659 / 8.6
26PP01 SPEED REFERENCE
8669 / 9.1
8679 / 9.1
-26PP01-RR
8681
8691
26PP01 MAIN MOTOR THERMISTOR
26PP01-T1
26PP01-T2
-T1
-CB882
-26PP01-VRR
MOTOR HEATER ON
-26PP01-HET

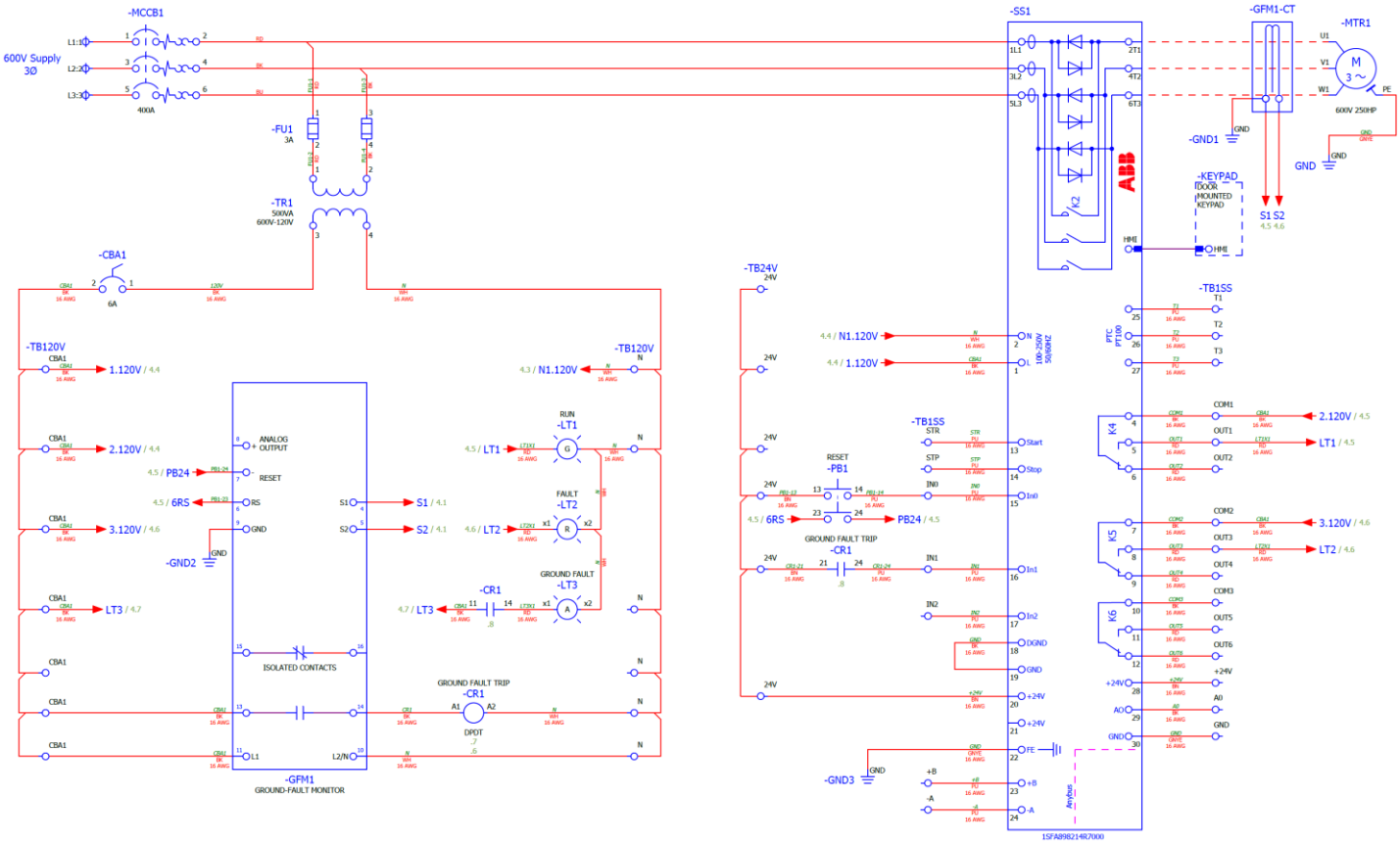

24V DC Supply -PS1
CB110
0V
-CB202
-TB-200
26-KG-01
-PLC0-R0-S3
CLX DC Digital Input Module
26-KG-0101
26-KG-0102
26-KG-0103
26-KG-0104
26-KG-0105
26-KG-02
26-KG-0201
26-KG-0202
26-KG-0203
-TB-200
CB302


24V DC Supply -PS1
CB110
0V
CB302
-TB-200
26-KG-02
26-KG-0204
26-KG-0205
-PLC0-R0-S3
CLX DC Digital Input Module
26-FA-01
26-GE-01
26-GE-0101
-TB-200
CB302

Process Water Pump **Soft Starter**– Newfoundland and Labrador, Canada

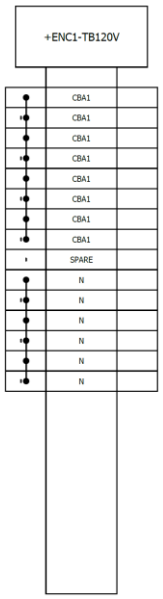
Location of installation: Newfoundland and Labrador, Canada
Client: Calibre Mining
[Valentine Gold Mine Open Pit]





Terminal Strip Diagram

Terminal		
Part number	Type number	Cross-section
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4
PXC.3209604	PTTBS 2,5	4

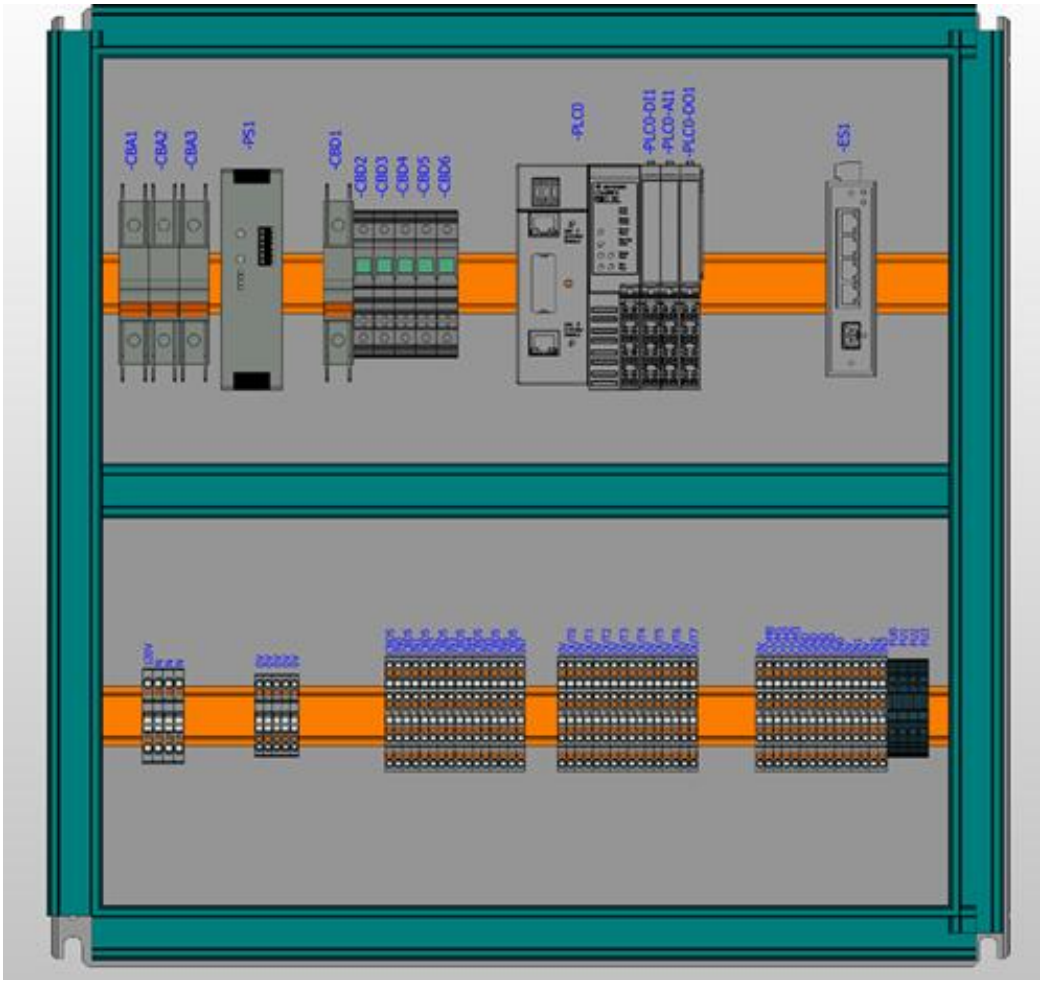


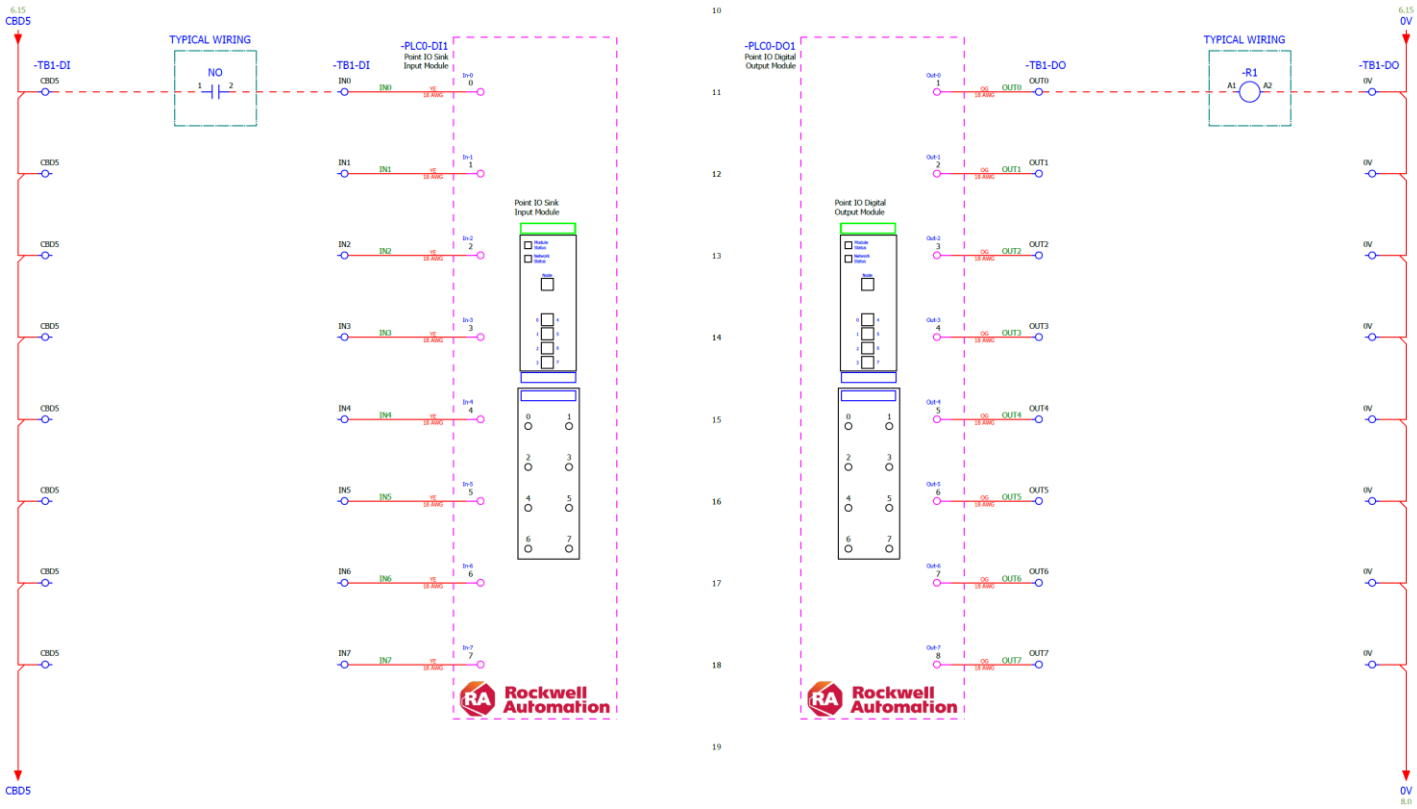
Device Tag List

Device Tag	Location	Description	Part Number
CBA1	ENC1	Thermomagnetic device circuit breaker TMC 81B 06A	PXC.2907483
CR1	ENC1	PLC-RPT-120UC/21-21	PXC.2900335
FU1	ENC1	2P Fuseholder Class CC 30A, fuse size as per schematics	MER.USCC2
GFM1	ENC1	Microprocessor-based, earth-leakage monitor for solidly grounded and resistance-grounded ac systems	LTF.SE-701
GFM1-CT	ENC1	Current Transformer	LTF.EFCT-26
KEYPAD	ENC1	External Keypad for Softstarter series PSE18...PSE370	ABB.1SFA897100R1001
LT1	ENC1	Holder for 3 modules, Metal Indicator lights, 22 mm, round, metal, shiny, green, lens, smooth LED, 24-240 V AC/DC, GREEN	SIE.3SU1550-0AA10-0AA0 SIE.3SU1051-6AA40-0AA0 SIE.3SU1401-1BH40-1AA0
LT2	ENC1	Holder for 3 modules, Metal INDICATOR LIGHT, RED LED, 24-240 V AC/DC, RED	SIE.3SU1550-0AA10-0AA0 SIE.3SU1051-6AA20-0AA0 SIE.3SU1401-1BH20-1AA0
LT3	ENC1	Holder for 3 modules, Metal Indicator lights, 22 mm, round, metal, shiny, amber, lens, smooth LED, 24-240 V AC/DC, AMBER	SIE.3SU1550-0AA10-0AA0 SIE.3SU1051-6AA00-0AA0 SIE.3SU1401-1BH00-1AA0
MCCB1	ENC1	XT5L 400 EkipM Dip LIU(MPCB)400 3p FF UL489	ABB.XT5LU340AENF000XXX
SS1	ENC1	PSTX300-690-70 Softstarter	ABB.1SFA898214R7000
TR1	ENC1	500VA Control Transformer 600-120	HPS.SP500ACP

Remote **IO Panel**– BC, Canada

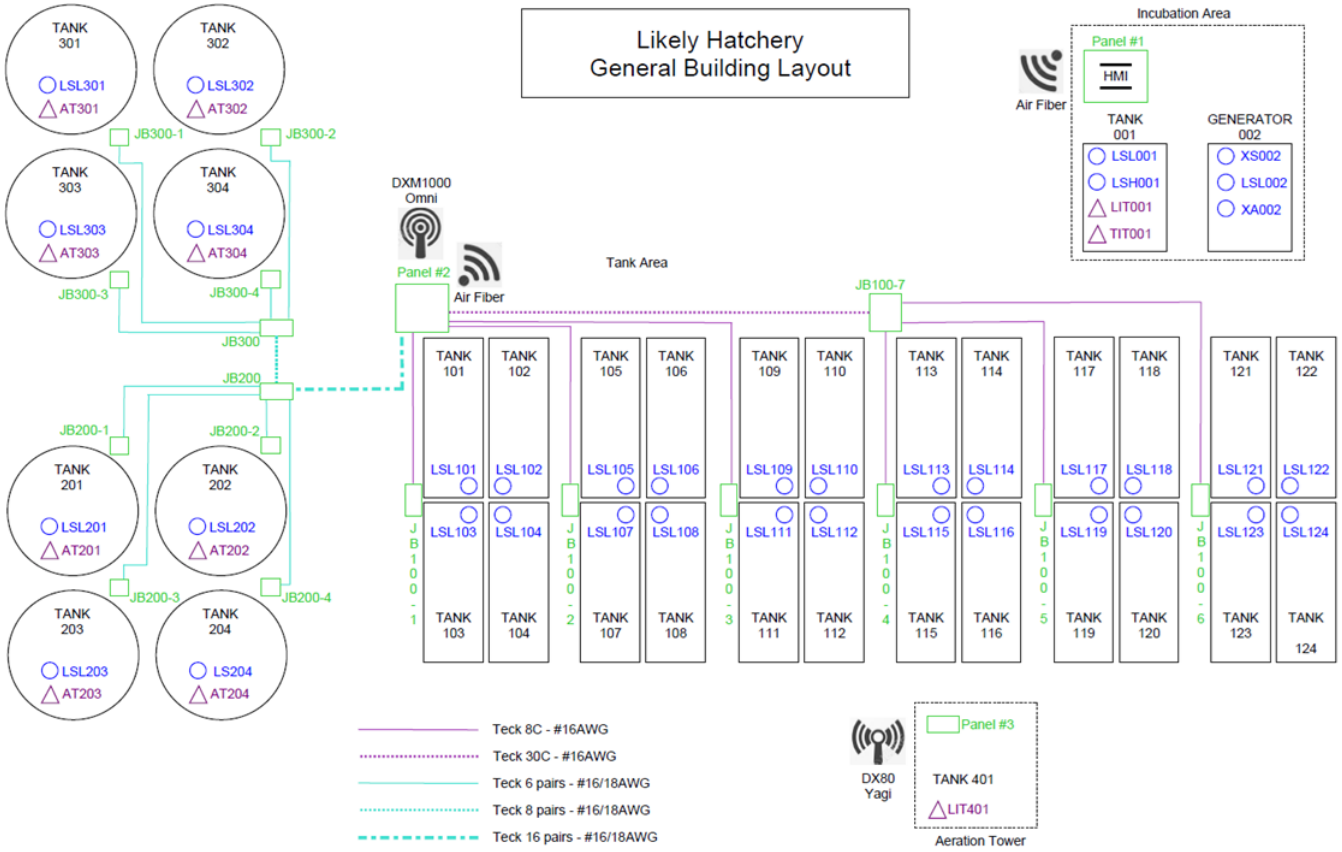
Location of installation: Brucejack, BC Canada
Client: Newmont Corporation
[Brucejack Gold Mine]

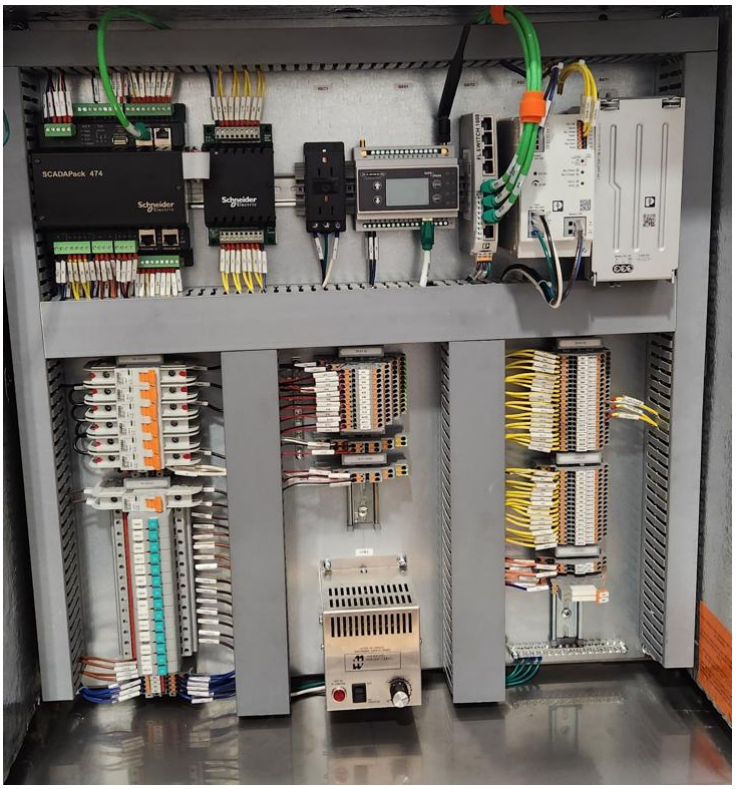




SCADA and remote monitoring for **Salmon Hatcheries** – BC, Canada

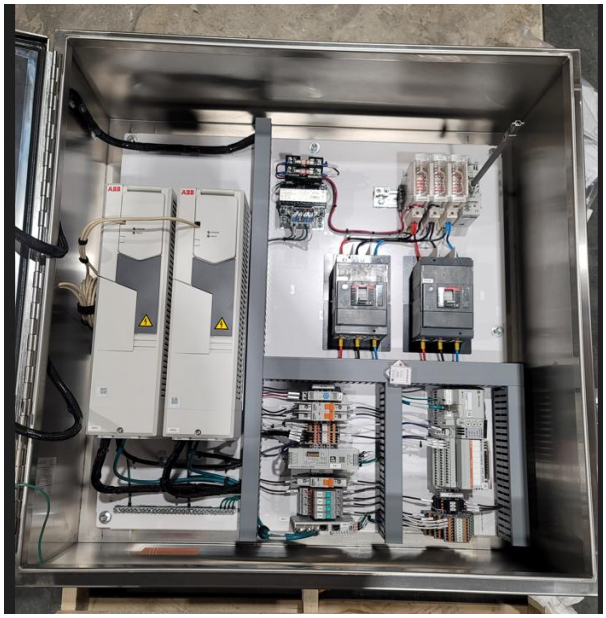
Location of installation: **Likely**, BC Canada
Client: operated by **Fisheries and Oceans** Canada

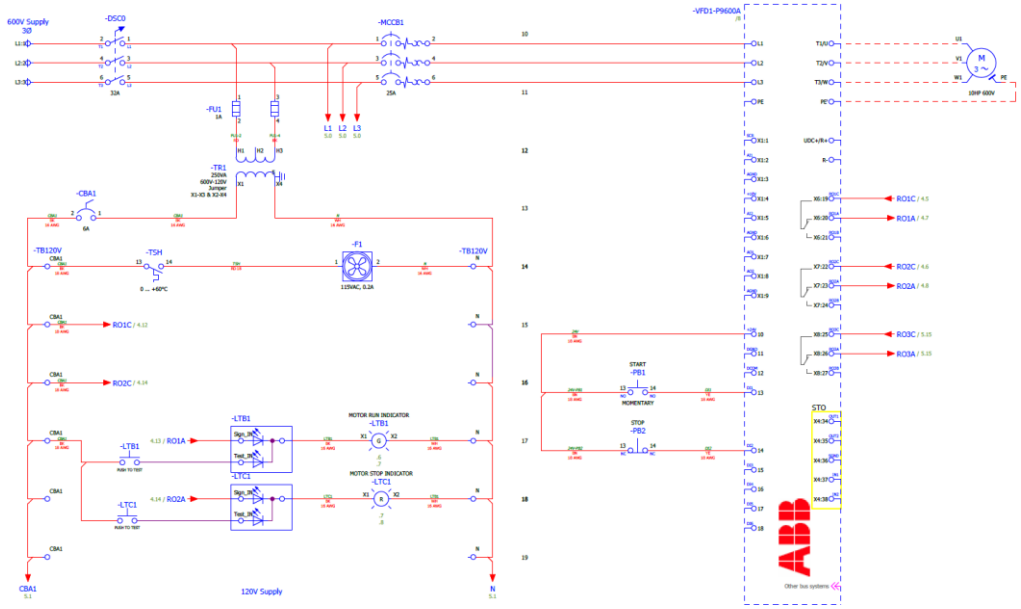


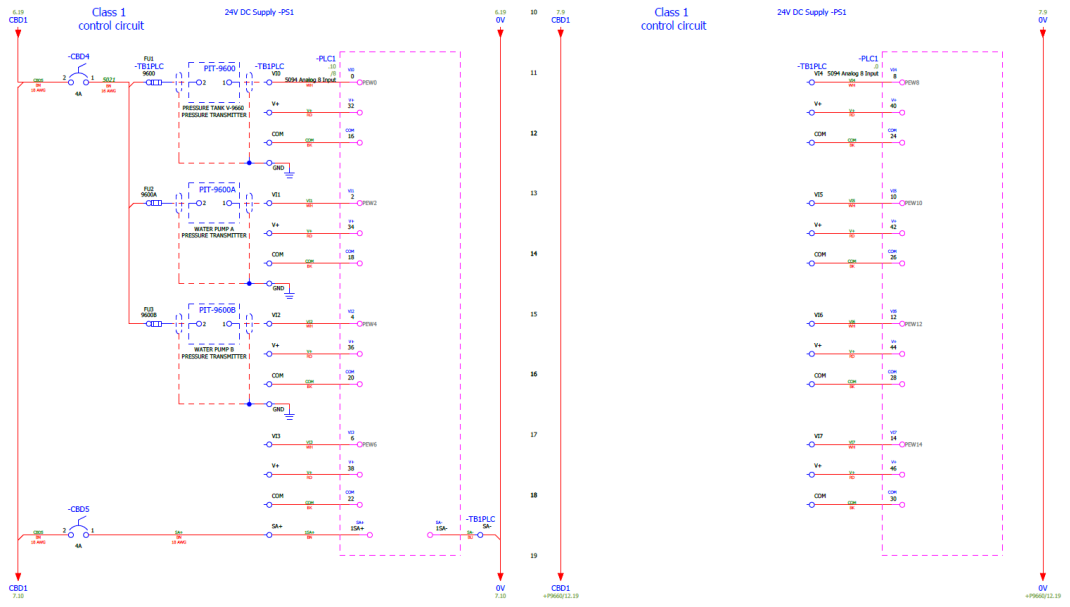


MBBR Water Treatment Plant – BC, Canada

Location of installation: **Tumbler Ridge**, BC Canada
Client: CONUMA RSOURCES LTD
[Brule Coal Mine]



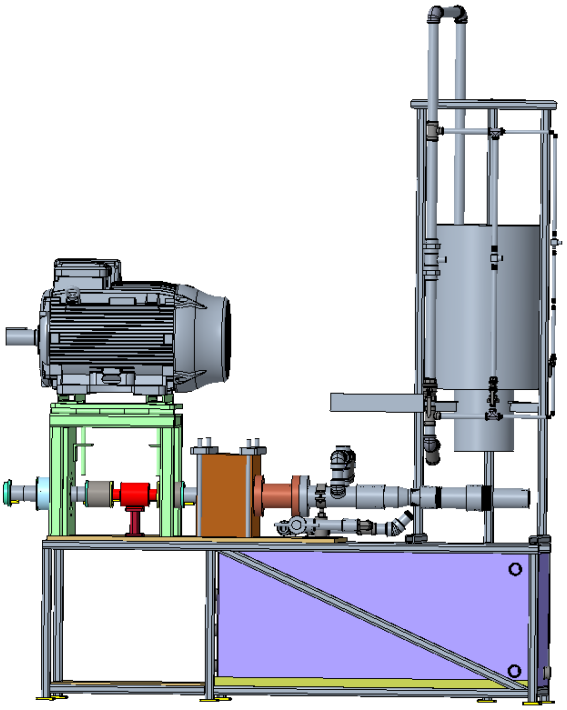


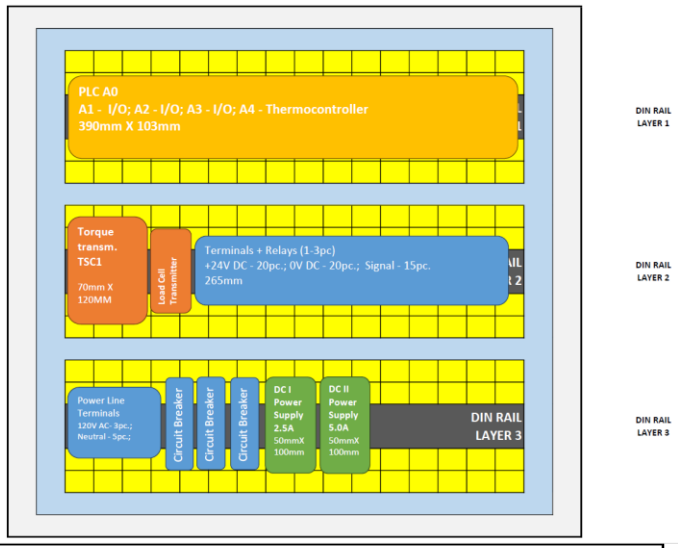


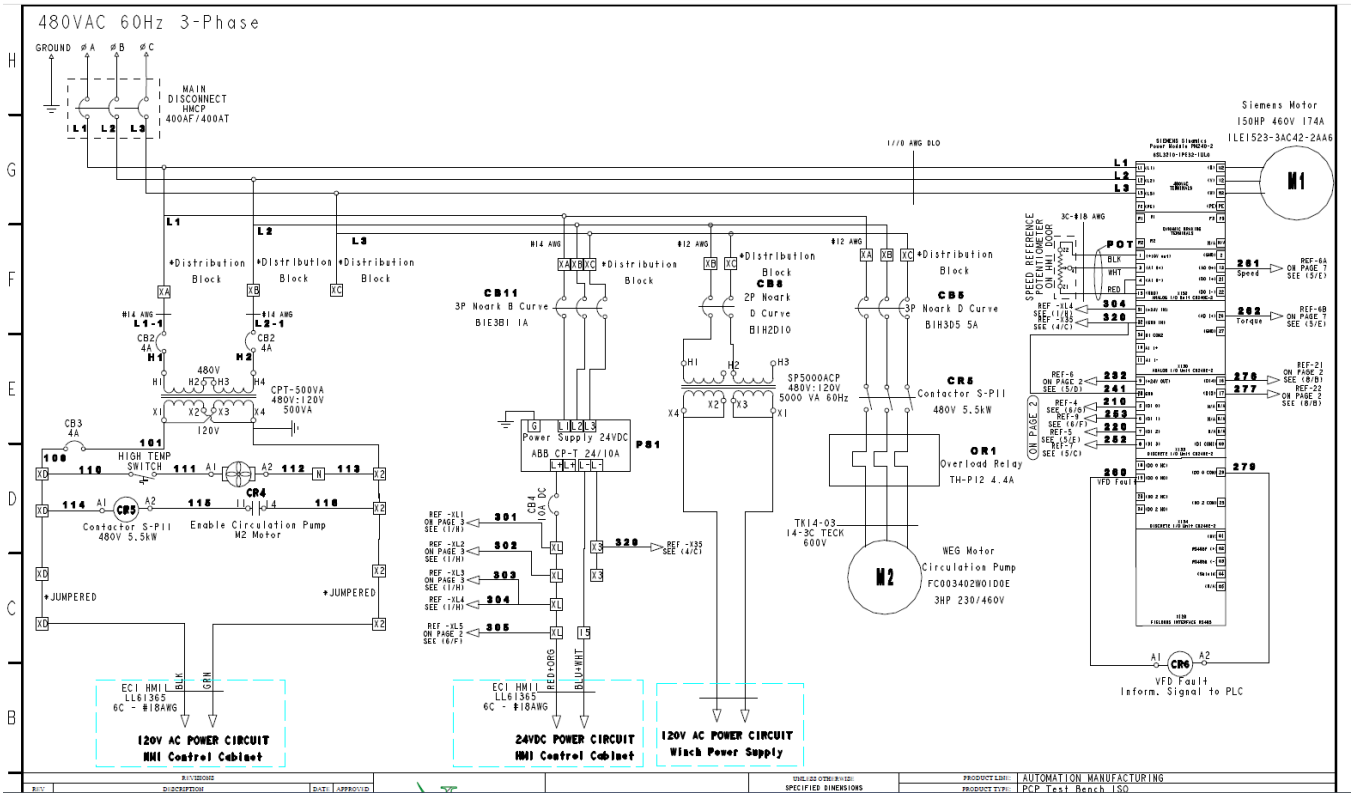
Hardware concept and electrical documentation for **Test Bench** complying **ISO 15136-1:2009 –** Edmonton, AB Canada

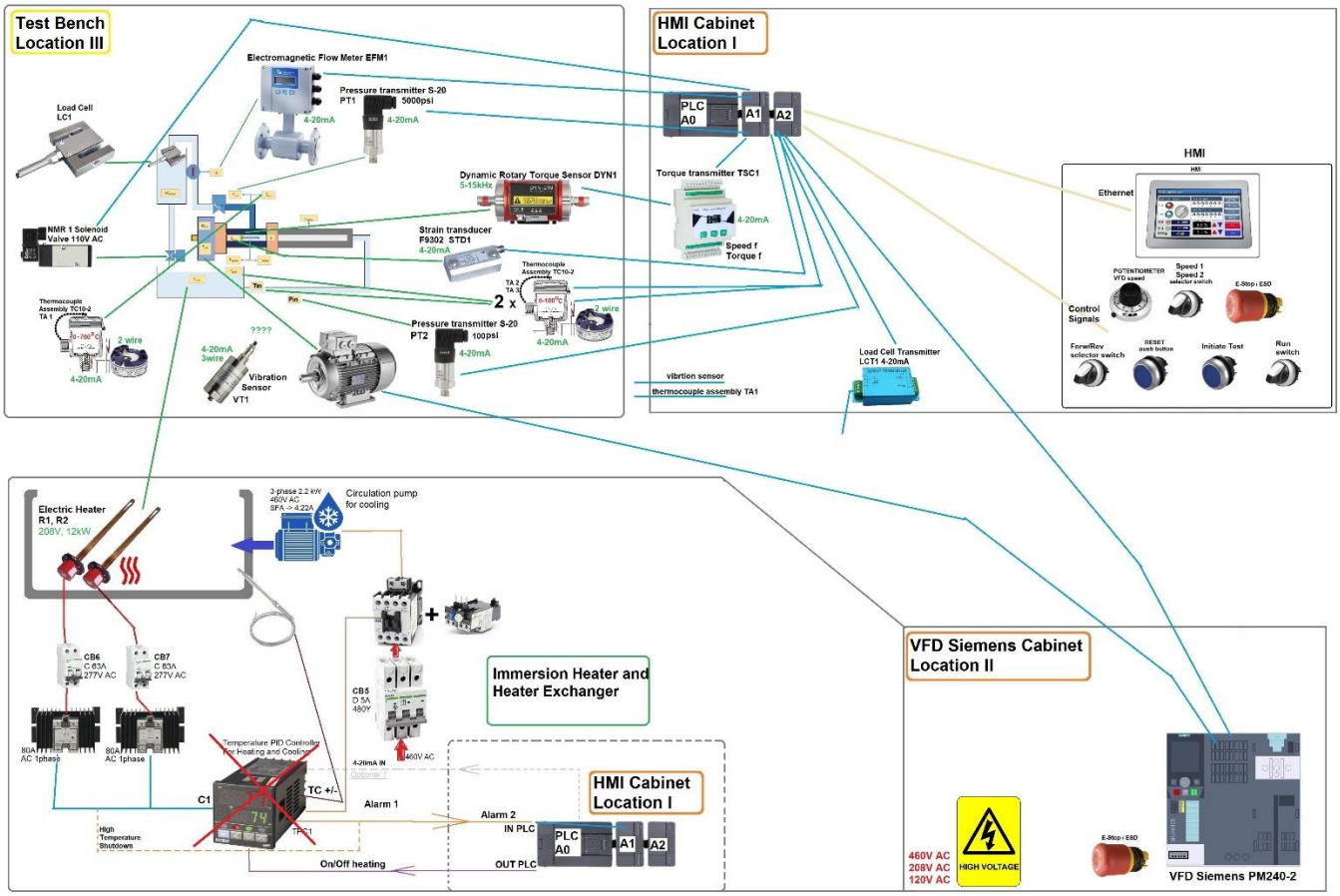
Location of installation: **Lifting Solutions Inc**. Manufacturing plant - Edmonton

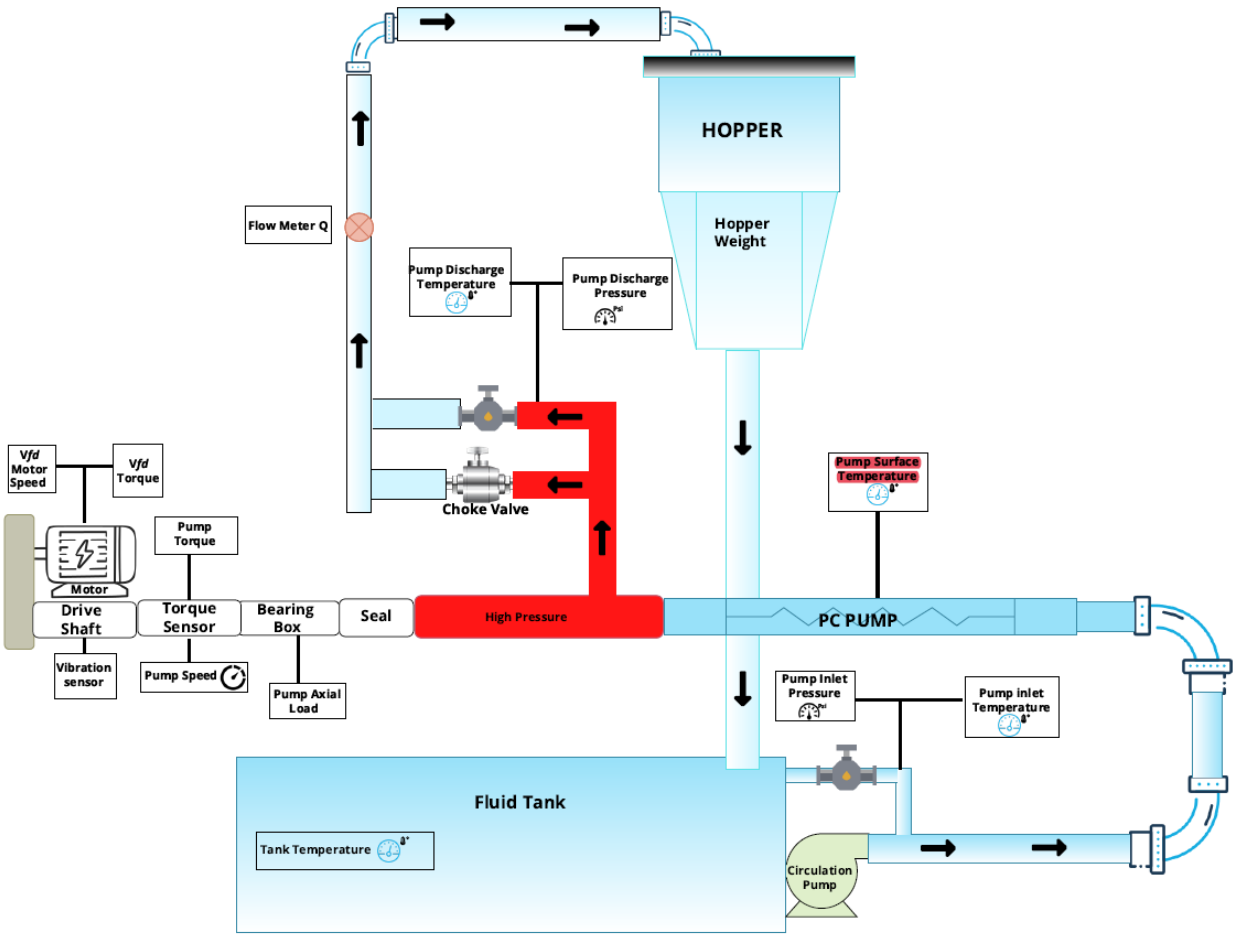
Industry: **Oil & Gas** Artificial Lift Systems








Test Bench
Location III
Electromagnetic Flow Meter EFM1
Pressure transmitter S-20
PT1
5000psi
4-20mA
Load Cell
LC1
Dynamic Rotary Torque Sensor DYN1
5-15kHz
NMR 1 Solenoid
Valve 110V AC
Strain transducer
P9302 STD1
4-20mA
Thermocouple
Assembly TC10-2
TA 1
2 wire
4-20mA
Pressure transmitter S-20
PT2
100psi
4-20mA
2 x
4-20mA 3wire
Vibration
Sensor
VT1
HMI Cabinet
Location I
PLC
A0
A1
A2
Torque transmitter TSC1
4-20mA
Speed f
Torque f
HMI
Ethernet
Control
Signals
POTENTIOMETER
VFD speed
Speed 1
Speed 2
selector switch
E-Stop / ESD
ForwrRev
selector switch
RESET
push button
Initiate Test
Run
switch
Load Cell Transmitter
LCT1 4-20mA
vibrtion sensor
thermocouple assembly TA1
Electric Heater
R1, R2
208V, 12kW
Circulation pump
for cooling
CB6
C 63A
277V AC
CB7
C 63A
277V AC
CB5
D 5A
480V
Immersion Heater and
Heater Exchanger
80A
AC 1phase
Temperature PID Controller
for Heating and Cooling
TC +/-
C1
Alarm 1
Alarm 2
IN PLC
OUT PLC
HMI Cabinet
Location I
High
Temperature
Shutdown
On/Off heating
VFD Siemens Cabinet
Location II
460V AC
208V AC
120V AC
HIGH VOLTAGE
VFD Siemens PM240-2

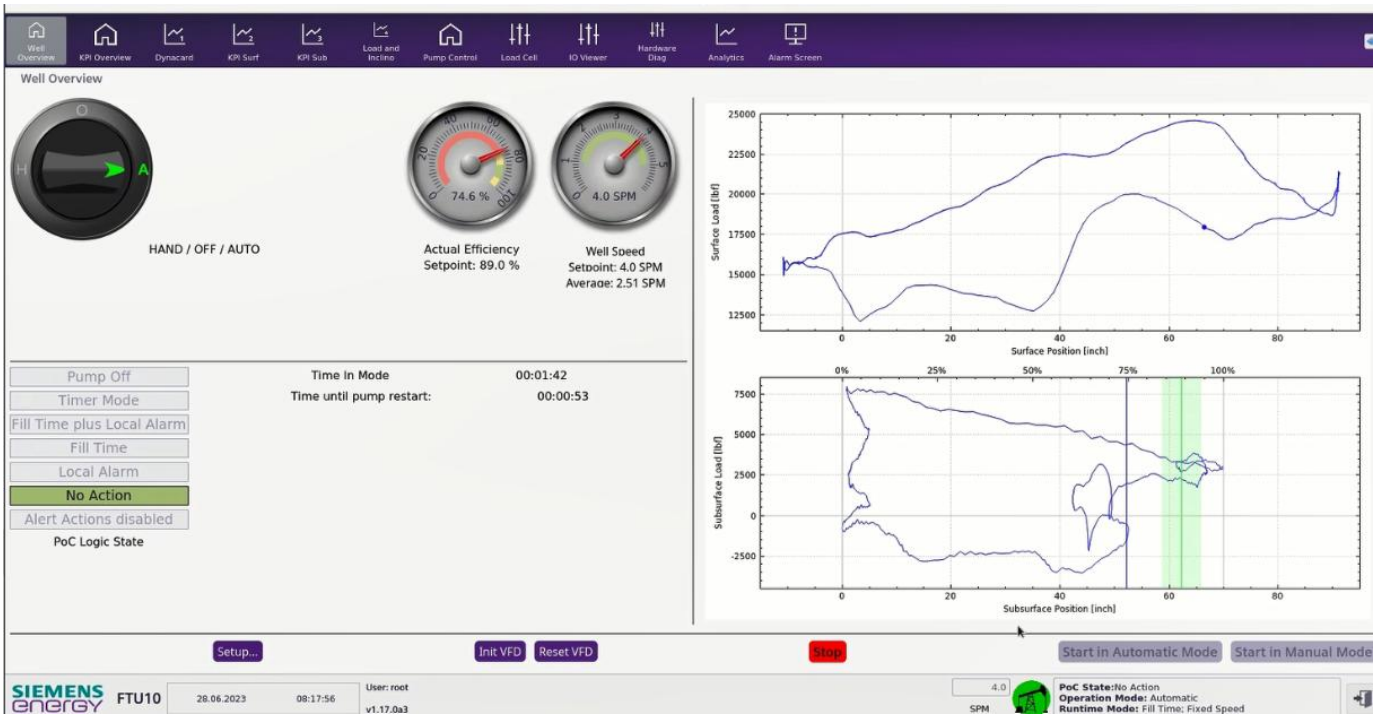

HOPPER
Hopper
Weight
Flow Meter Q
Pump Discharge
Temperature
Pump Discharge
Pressure
Choke Valve
Vfd
Motor
Speed
Vfd
Torque
Pump
Torque
Motor
Drive
Shaft
Torque
Sensor
Bearing
Box
Seal
High Pressure
PC PUMP
Pump Surface
Temperature
Vibration
sensor
Pump Speed
Pump Axial
Load
Pump Inlet
Pressure
Pump inlet
Temperature
Fluid Tank
Tank Temperature
Circulation
Pump

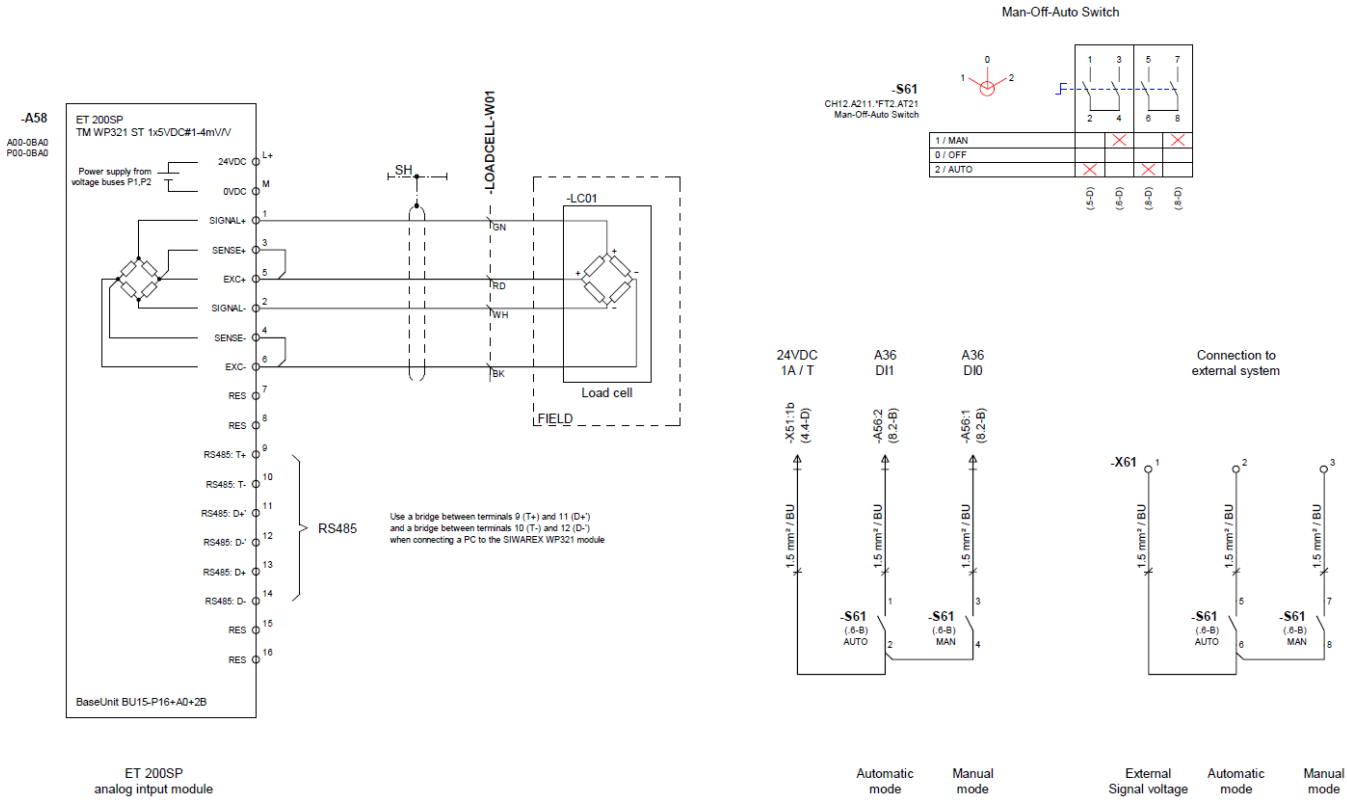
Electrical documentation and start-up manuals for **VFD packages** (**CSA** and **UL** certified)– Sucker Rod System, Progressive Cavity Pumps.

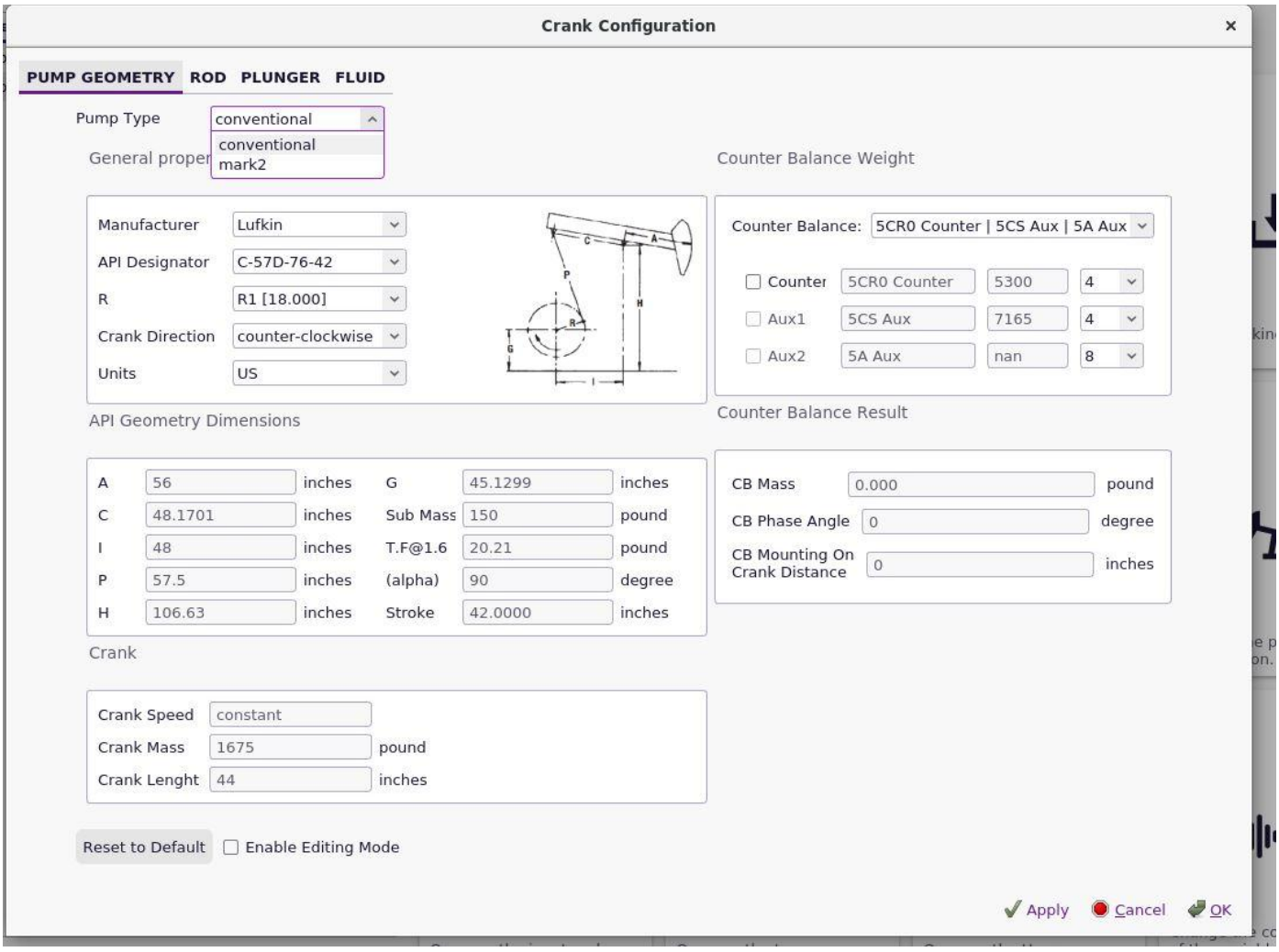
Hardware concept; electrical documentation; HMI design; functional improvements; supportive documentation for **Pump-off-Controller**

Location of installation: Global presence (Canada, USA, Middle East)

Industry: **Oil and Gas**




-A58
ET 200SP
TM WP321 ST 1x5VDC#1-4mV/V
A00-0BA0
P00-0BA0
Power supply from voltage buses P1,P2
24VDC
0VDC
SIGNAL+
SENSE+
EXC+
SIGNAL-
SENSE-
EXC-
RES
RES
RS485: T+
RS485: T-
RS485: D+
RS485: D-
RS485: D+
RS485: D-
RES
RES
RS485
BaseUnit BU15-P16+A0+2B
SH
-LOADCELL-W01
GN
RD
WH
BK
-LC01
Load cell
FIELD
Use a bridge between terminals 9 (T+) and 11 (D+) and a bridge between terminals 10 (T-) and 12 (D-) when connecting a PC to the SIWAREX WP321 module
ET 200SP
analog intput module
Man-Off-Auto Switch
-S61
CH12.A211.*FT2.AT21
Man-Off-Auto Switch
1 / MAN
0 / OFF
2 / AUTO
24VDC
1A / T
A36
DI1
A36
DI0
-X51:1b
(4.4-D)
-A56:2
(8.2-B)
-A56:1
(8.2-B)
1.5 mm² / BU
-S61
(.6-B)
AUTO
-S61
(.6-B)
MAN
Automatic
mode
Manual
mode
Connection to
external system
-X61
External
Signal voltage
Automatic
mode
Manual
mode

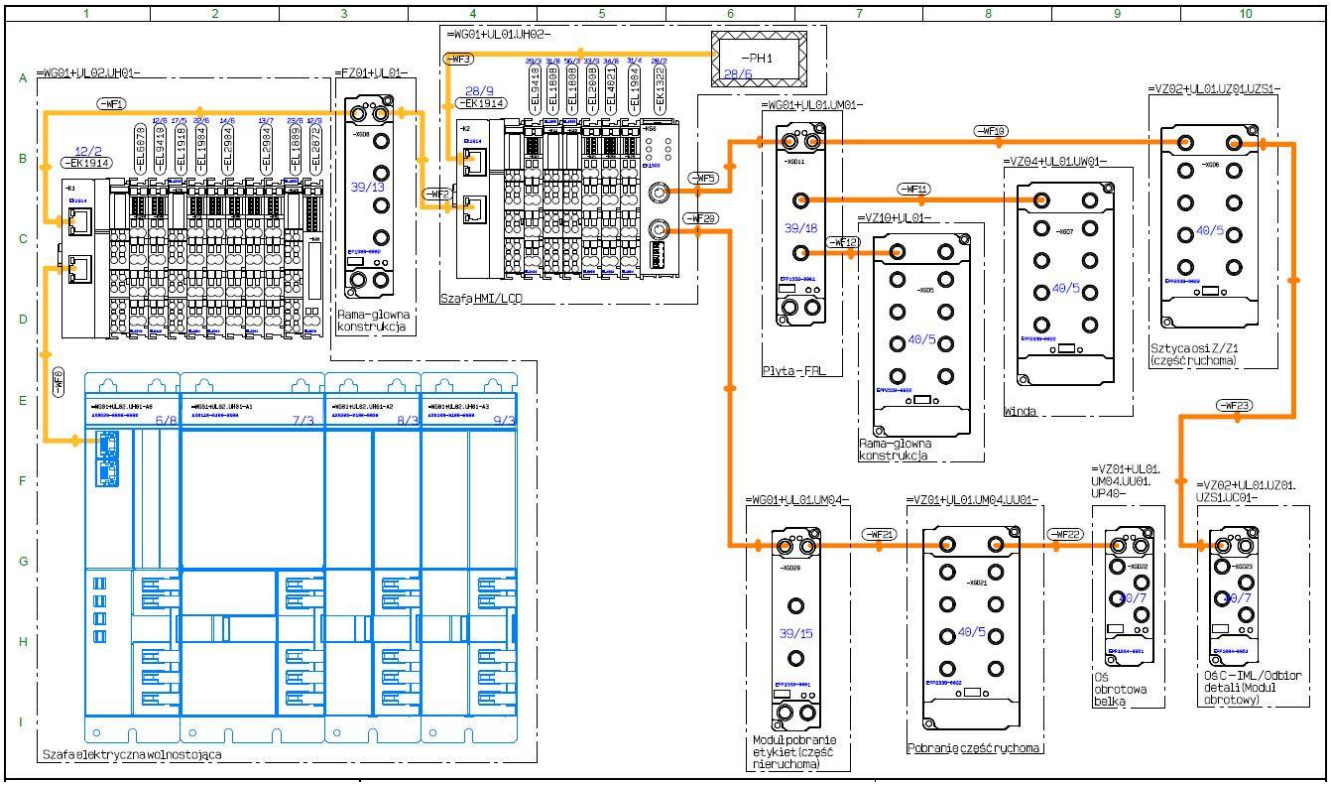

Crank Configuration
PUMP GEOMETRY
ROD
PLUNGER
FLUID
Pump Type
conventional
conventional
mark2
General proper
Counter Balance Weight
Manufacturer
Lufkin
API Designator
C-57D-76-42
R
R1 [18.000]
Crank Direction
counter-clockwise
Units
US
API Geometry Dimensions
Counter Balance:
5CR0 Counter | 5CS Aux | 5A Aux
Counter
5CR0 Counter
5300
4
Aux1
5CS Aux
7165
4
Aux2
5A Aux
nan
8
Counter Balance Result
A
56
inches
G
45.1299
inches
C
48.1701
inches
Sub Mass
150
pound
I
48
inches
T.F@1.6
20.21
pound
P
57.5
inches
(alpha)
90
degree
H
106.63
inches
Stroke
42.0000
inches
Crank
CB Mass
0.000
pound
CB Phase Angle
0
degree
CB Mounting On Crank Distance
0
inches
Crank Speed
constant
Crank Mass
1675
pound
Crank Lenght
44
inches
Reset to Default
Enable Editing Mode
Apply
Cancel
OK

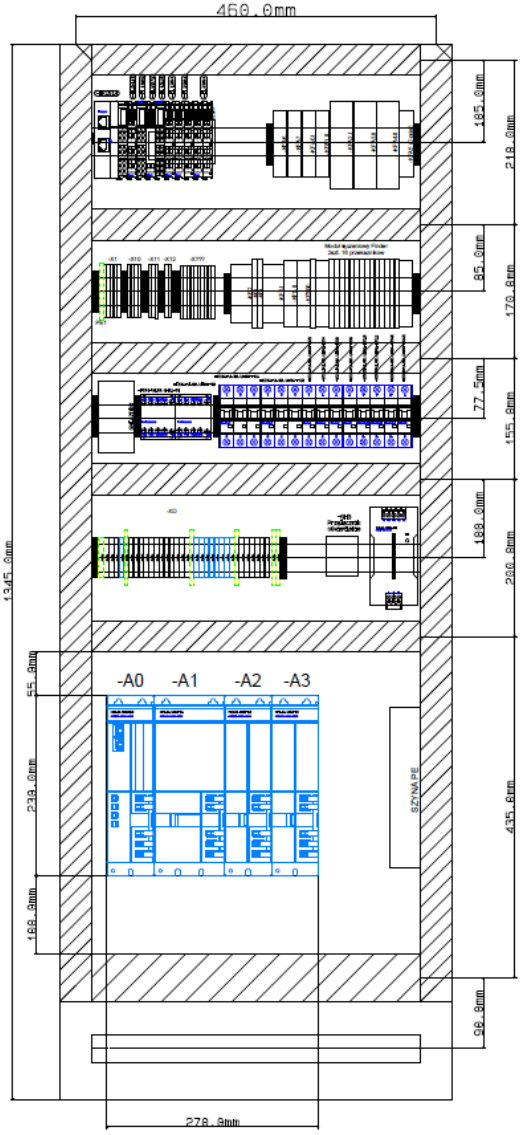
Hardware concept and electrical documentation for control system sleeve mold heaters **6.5kW**
Location of installation: **Lifting Solutions Inc**., Manufacturing plant - Edmonton
Industry: **Oil & Gas** Artificial Lift Systems

Electrical/Pneumatic design for **R&D** project In-mold labeling automation

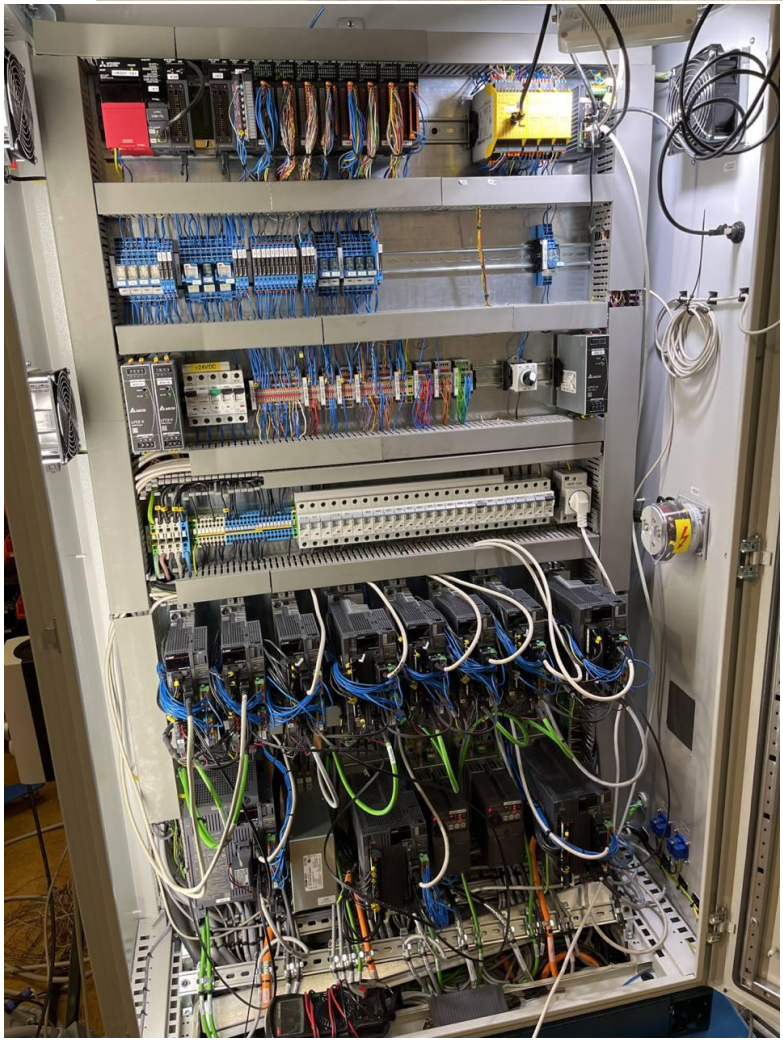
Location of installation: **Poland**, Europe

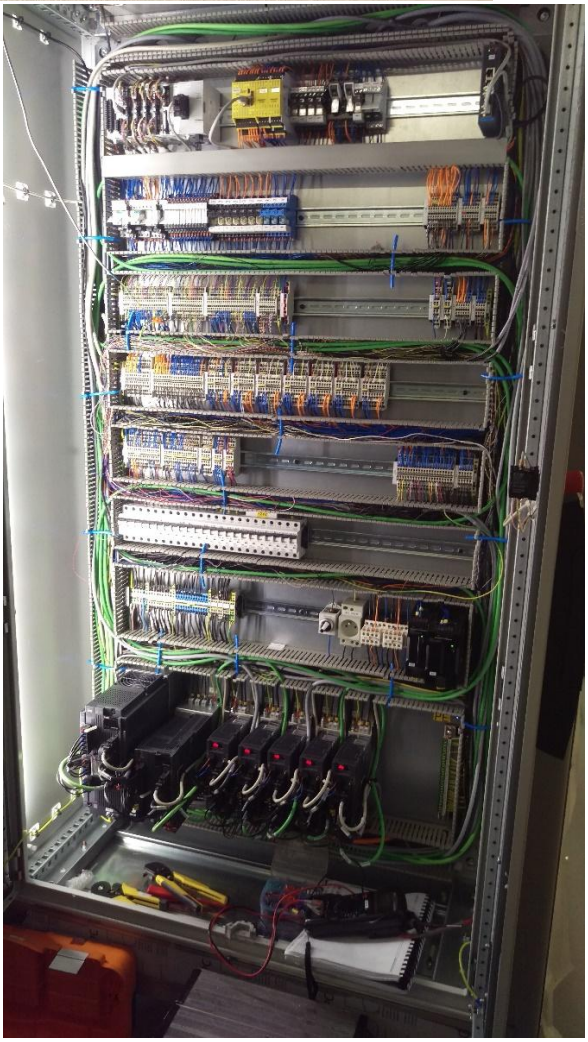
Industry: Food Packaging

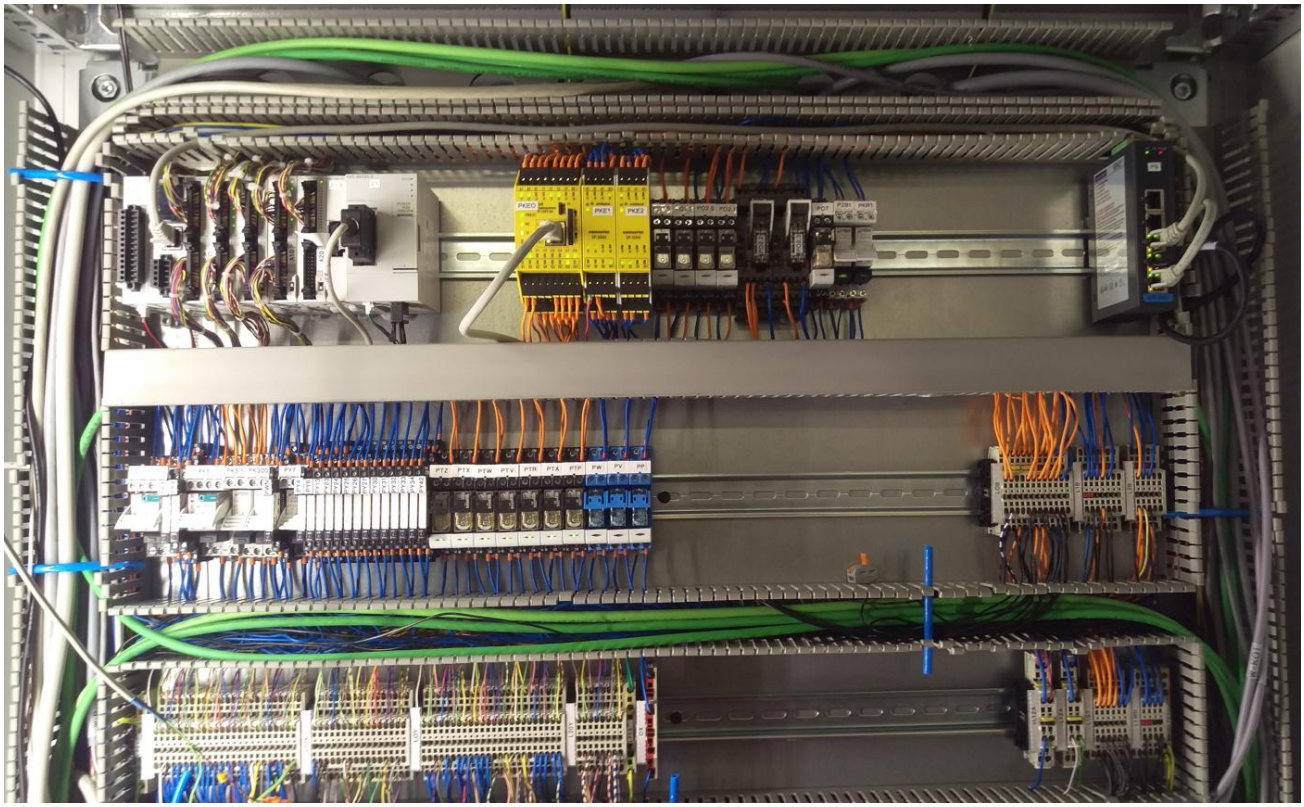




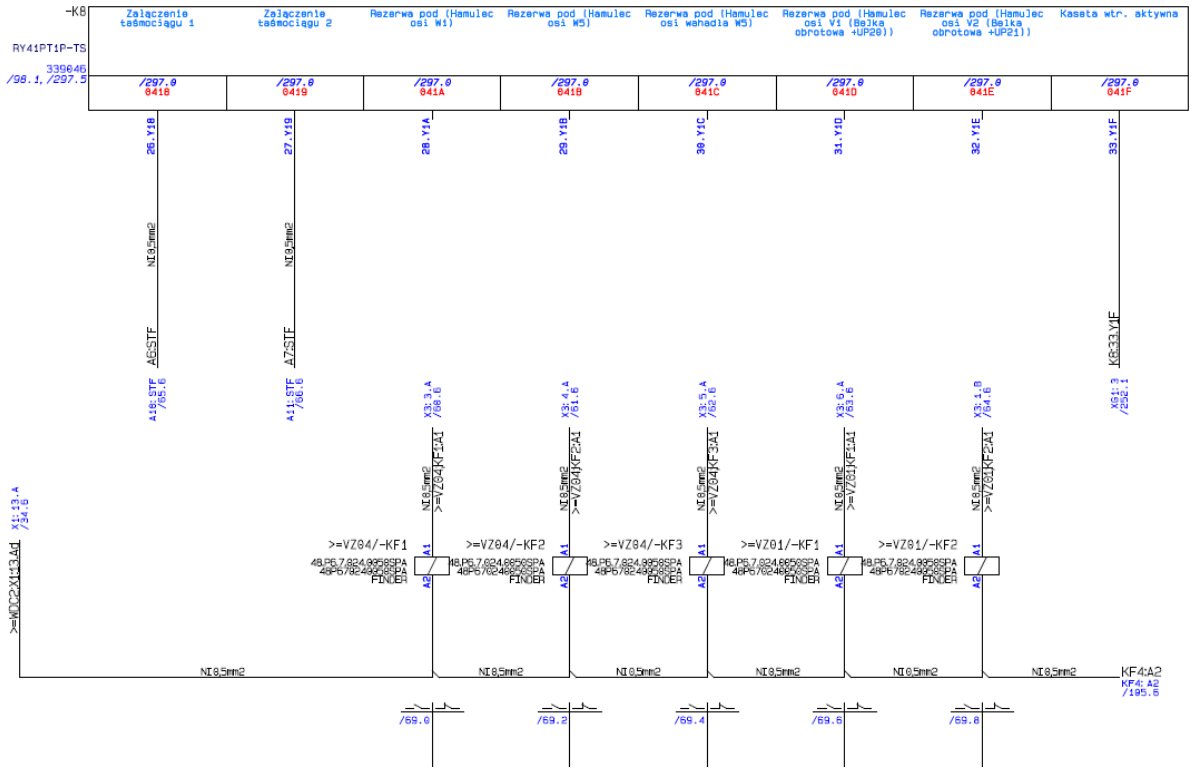
Electrical design package: including electrical and pneumatic schematics, routing diagrams, panel layouts, bills of materials, and components for **IML automation** system

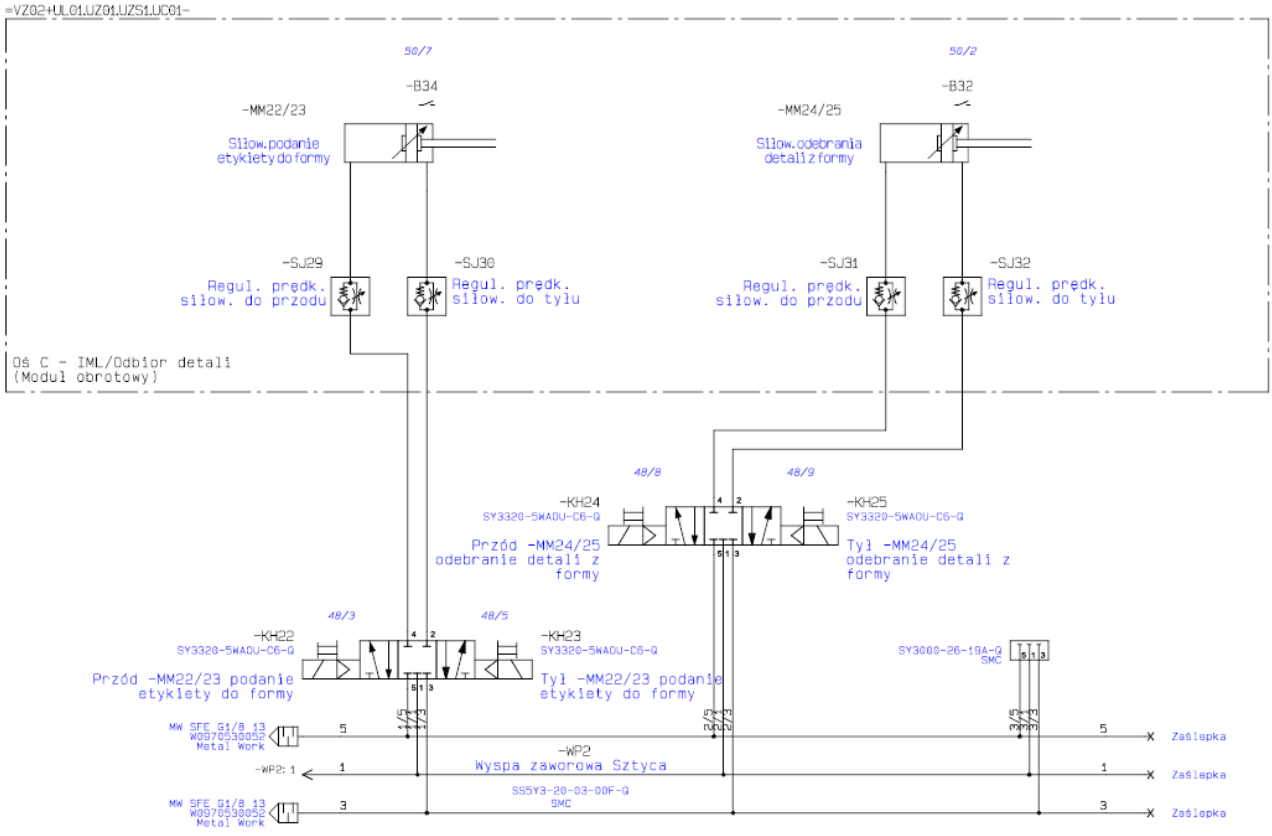


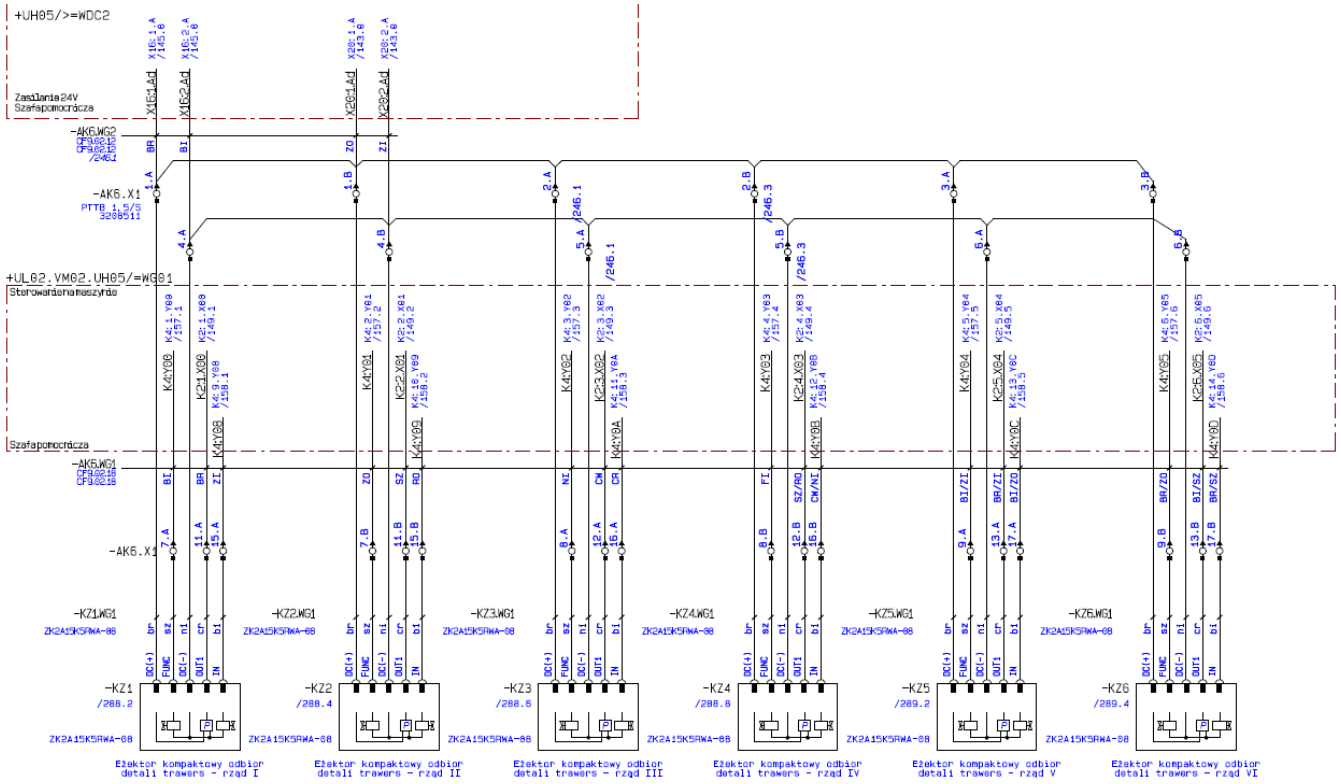


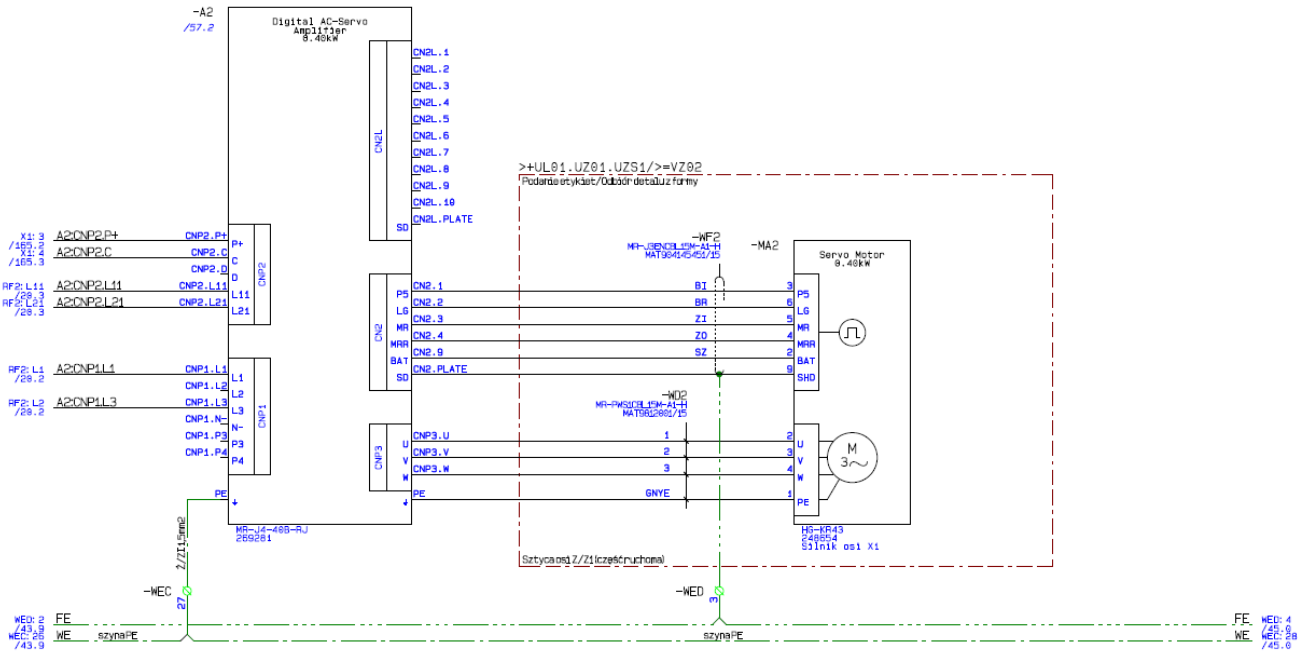



PE

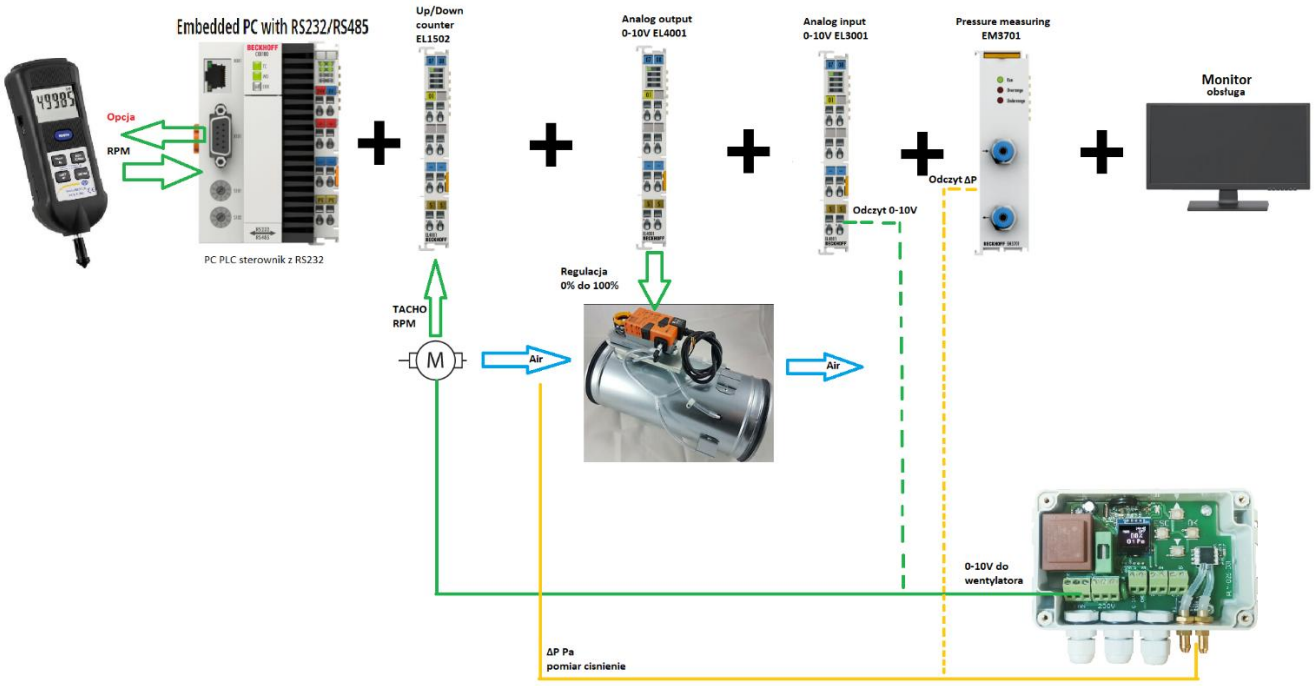

-K8
Załączenie taśmociągu 1
Załączenie taśmociągu 2
Rezerwa pod (Hamulec osi W1)
Rezerwa pod (Hamulec osi W3)
Rezerwa pod (Hamulec osi wahadła W3)
Rezerwa pod (Hamulec osi V1 (Belka obrotowa +UP20))
Rezerwa pod (Hamulec osi V2 (Belka obrotowa +UP21))
Kaseta wtr. aktywna
RY41PT1P-TS
339046
/98.1, /297.5
/297.0 841B
/297.0 841C
/297.0 841D
/297.0 841E
/297.0 841F
26.Y1B
27.Y1C
28.Y1A
29.Y1B
30.Y1C
31.Y1D
32.Y1E
33.Y1F
NI4,5mm2
A6:STF
A7:STF
K8:33.Y1F
A10:STF /65.6
A11:STF /66.6
X3:3.A /66.6
X3:4.A /61.6
X3:5.A /62.6
X3:6.A /63.6
X3:1.B /64.6
XG1:3 /252.1
>=WDC2X143:A4 /54.6
NI8,5mm2
>=VZ04KF1A1
>=VZ04KF2A1
>=VZ04KF3A1
>=VZ01KF1A1
>=VZ01KF2A1
>=VZ04/-KF1
>=VZ04/-KF2
>=VZ04/-KF3
>=VZ01/-KF1
>=VZ01/-KF2
48P67824.8856SPA
48P67824.8856SPA
FINDER
A1
A2
KF4:A2
KF4: A2
/195.6
/69.0
/69.2
/69.4
/69.6
/69.8


=VZ02+UL01.UZ01.UZS1.UC01-
50/7
50/2
-B34
-B32
-MM22/23
Siłow.podanie etykiety do formy
-MM24/25
Siłow.odebrania detali z formy
-SJ29
Regul. prędk. siłow. do przodu
-SJ30
Regul. prędk. siłow. do tyłu
-SJ31
Regul. prędk. siłow. do przodu
-SJ32
Regul. prędk. siłow. do tyłu
Oś C - IML/Odbiór detali (Moduł obrotowy)
48/8
48/9
-KH24
SY3320-5WAOU-C6-Q
Przód -MM24/25 odebranie detali z formy
-KH25
SY3320-5WAOU-C6-Q
Tył -MM24/25 odebranie detali z formy
48/3
48/5
-KH22
SY3320-5WAOU-C6-Q
Przód -MM22/23 podanie etykiety do formy
-KH23
SY3320-5WAOU-C6-Q
Tył -MM22/23 podanie etykiety do formy
SY3000-26-19A-Q
SMC
MW SFE G1/8 13
W0970530052
Metal Work
-WP2
Wyspa zaworowa Sztyca
-WP2: 1
SS5Y3-20-03-08F-Q
SMC
Zaślepka

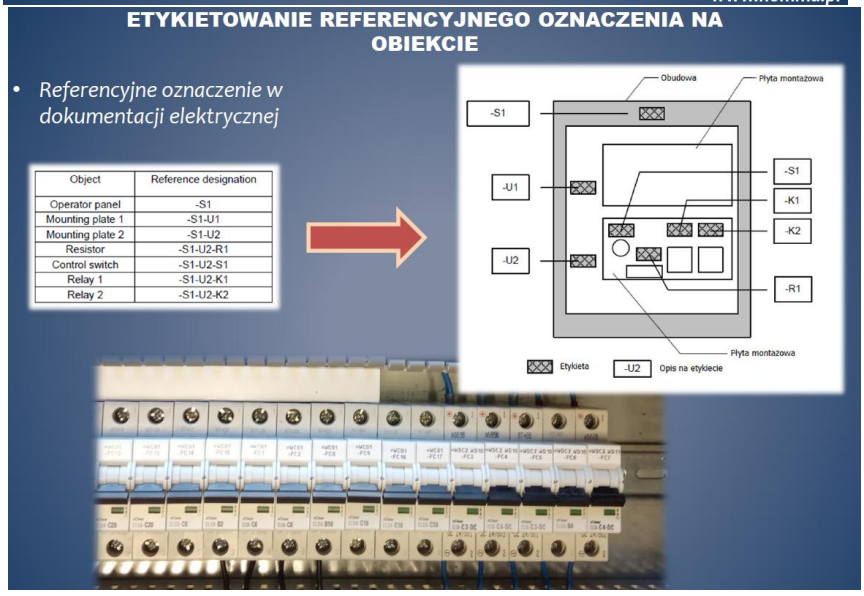

+UH05/>=WDC2
Zasilania 24V Szafapomocnicza
-AK6.WG2
-AK6.X1
+UL02.VM02.UH05/=WG01
Sterowanie maszyny
Szafapomocnicza
-AK6.WG1
-KZ1.WG1
-KZ2.WG1
-KZ3.WG1
-KZ4.WG1
-KZ5.WG1
-KZ6.WG1
-KZ1
-KZ2
-KZ3
-KZ4
-KZ5
-KZ6
Ejektor kompaktowy odbior detali trawers - rząd I
Ejektor kompaktowy odbior detali trawers - rząd II
Ejektor kompaktowy odbior detali trawers - rząd III
Ejektor kompaktowy odbior detali trawers - rząd IV
Ejektor kompaktowy odbior detali trawers - rząd V
Ejektor kompaktowy odbior detali trawers - rząd VI


-A2
Digital AC-Servo Amplifier 0.40kW
>+UL01.UZ01.UZS1/>=VZ02
Podanie etykiet/Odbiór detali z formy
-WF2
-MA2
Servo Motor 0.40kW
-WD2
Sztywna osi Z/Z1 część ruchoma
-WEC
-WED
szynaPE

Hardware concept and electrical documentation – **Fan Performing Testing** for **HVAC**



Training courses for machine builders - structuring principles and reference designations according to **EN 81346**



Hardware design for electrical and ventilation system– **Crypto mining warehouse** for **150KW** total power consumption