

Sweet Service 3 Phase Vertical Separator / Tank Package – 14-5324

EQUIPMENT LIST

SEPARATOR V-100

- 1, **RJV**- 16" x 7'6"s/s, 600# ANSI, 1,440 psi, 3-Phase Vertical Mistex c/w...
- * 0.844" Thick SA-106-B Shell
 - * 0.875" Thick SA-516-70 Heads
 - * 1,440 psig Design Pressure
 - * 100° F Design Temperature
 - * 1/6" Corrosion Allowance
 - * 2" 600# ANSI RFF -Inlet & Gas Outlet Nozzles
 - * 2" 600# ANSI RFF –PSV Connection
 - * 2"NPT 6000# Coupling -LC, LCV, Drain, & HLSD Nozzles
 - * 3/4"NPT 6000# Coupling -LG, TI Nozzles
 - * 1/2" NPT 6000# Coupling –PI Nozzle
 - * 6"Thick, 9#/Cu. ft. Density, 304 SST Mistex Pad
 - * Inlet Divertor, Float Hood Baffles & Internals
 - * **Radiography To Code * Hydro Tested To Code**
 - ** **Vessels Shall Be Inspected And Stamped By The Alberta Boilers Safety Association, And Shall Be Registered In The Provinces Of Alberta.**

SHUT DOWN VALVE /EMERGENCY ESDV-100

- 1, **CVS** Actuator C/W 2" 1500# Jag Ball Valve
- * 2" 1500# RF Jag T3-R20R15B Ball Valve
 - * A105 Body
 - * Carbon Steel Trim, Standard Service
 - * Rack And Pinion Style
 - * Pneumatic Spring Return, Fail Closed
 - * 80 Psig Supply
 - * Spring Ending Torque Output Is 787 In-Lbs
 - * Actuator Mounting Is Parallel To The Line
 - ** Rexroth Quick Release Vent on Act

FLOW CONTROL VALVE FCV-100

- 1, **DHV** 2" 1500# (or Equivalent)
Manual Globe Valve
- * Carbon Steel Body
 - * Standard Trim
 - * Manually Operated

PRESSURE SWITCH PSHH- 100

- 1, **CCS** Dual Snap Pressure Switch
- * Model Number 6900GE22 Dual Snap
 - * 120 VAC / 12 VDC Rating
 - * Aluminum Construction
 - * 1/4" Sensing Port * **Set @ 1200 Psig Rising**

ESD SWITCHING VALVE SOV-100

- 1, **ASCO** 1/4"NPT "Red Hat 2" Solenoid Valve
- * P/N EF8314G301
 - * 1/4" NPT 3-Way universal operation
 - * 24V DC * Low power solenoid

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ESD SWITCHING VALVE UV-100

- 1, **CVS** ¼"NPT Model 4057D025H2 Pneumatic 3-Way Switching Valve
* **Std Service**
* Type "CP" **c/w OVERLAP**
* Aluminum Body, * Viton Seals
* Viton Seals
* 125 psig Maximum, All Ports

LIQUID LEVEL CONTROL LC-100/101

- 2, **Dyna Flo** 2"NPT Series 5000
* Carbon Steel Body
* Standard Service
* Snap Acting
* Direct Acting
* 15" 303 Stainless Steel Displacer Arm
* 316 Stainless Steel Vertical Displacer Hanger
* 1-7/8" x 6" Horizontal PVC Displacer

LIQUIDS METER

FQI-101

- 1, **Primary Flow** 1"NPT Liquid Turbine Meter Packages c/w...

* (1) Single Port Liquids Turbine Meters
* 1"Bore x 1"MNPT
* 316L Stainless Steel Body & Vanes
* Alloy CD4Mcu Rotor
* Tungsten Carbide Shaft & Bearings
* 5-50 USGPM Linear Flow Range
* +- 0.50% Accuracy

* (1) Electromagnetic Pickup Coils
* 372 mH Inductance
* 1200 Ohms +- 10% Resistance DC

C/w **Nuflo** Low Power Pre-amp

*** Junction Boxes & Electrical Wiring to RTU Cabinet by RJV

Note: *** **Sample point located directly downstream of turbine meter**
C/w a cut ¾" thermowell / ½" isolation ball valve

LIQUID LEVEL CONTROL VALVE LCV-100/101

- 2, **Norriseal** 1"NPT Series 2275, Model S36-TGV-9AA Level Control Valve * WCC Steel Body
* Standard Service * Size 9AA Pneumatic Actuator,
* 0-35 psig Signal (ATO)
>>>> On Water Phase <<<<<
>>>> On Condensate Phase <<<<<

Cont'd.

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EQUIPMENT LIST

LEVEL GAUGE

LG-100

LG-101

- 2, **Penburthy** Model 1TM5 Transparent Gauge Glass
* Interface/Bottom & Condensates/Top Phase
** c/w Penburthy Model 330J Gauge Cocks
** c/w ½"NPT Drain Ball Valves & Tubing

PRESSURE SAFETY VALVE

PSV-100

Separator:

- 1, **Taylor** 1"MNPT x 1"FNPT
* Model 8200
* Carbon Steel Body
* Stainless Steel Spring
* Soft Seat, .128" Orifice
* Range 1001-1800
* **Set @ 1440 psig**

PRESSURE SAFETY VALVE

PSV-110

Fuel Gas :

- 1, **Taylor** 1"MNPT x 1"FNPT
* Model 8200
* Carbon Steel Body
* Stainless Steel Spring
* Soft Seat, .128" Orifice
* Range 101-215
* **Set @ 150 psig**

METER RUN

FE-100

Type:

- 1, **Nuflo** Single Chamber (Junior) Fitting
* AGA Fig. 3C
*.70 Beta Ratio

Size:

2" 600# ANSI Sch. 80

Service:

Standard Service

Connections:

2" 600# RFWN Sch. 80 Upstream Outer End
2" 600# RFWN Sch. 80 Downstream Outer End

Dimensions:

58.000" Overall Dimension (Bw To Bw)
37.000" Upstream x 21.000" Downstream

Taps:

(2) ½"NPT 3000# Thredolet Connection @0°
(1) ¾"NPT 3000# Thredolet Connection @270°

Bolting.:

B7 Studs & 2H Nuts, 304 SS Flex Gaskets

Testing:

Hydrostatically Tested To 1.5 Times Design

Inspection:

North Star In-House Inspection & Calibration

Orifice Plates:

(1) 2" 316 SST Cat.500 Orifice Plate

Misc.:

(1) 2" Orifice Plate Retainer Assembly

Cont'd.

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FLOW CONTROL VALVE FCV-100

- 1, **CVS** 2" 600# ANSI RFF (Type 667-D-45)
Pressure Control Valve / * WCB Steel Body
 - * Standard Sweet Service
 - * 1" Orifice Size / * Size 45 Actuator
 - * Fail Closed, Air To Open
- ** MAXIMUM SHUT-IN PRESSURE 1,440 PSIG**

I/P TRANSDUCER PZV-100

- 1, **Fisher** Type 546-S I/P Transducer
 - * Current To Pressure Transducer
 - * 4 - 20 mA Input Signal
 - * 35 psig Supply Signal
 - * 6-30 psig Output Signal
 - * Explosion Proof, Class 1, Div. 1 & 2
Groups B, C & D, CSA Approved
 - * Natural Gas Service

FUEL GAS SCRUBBER V-110

- 1, **RJV** 6" Sch.40 x 24"s/s
 - * 272 psig Design Pressure
 - * 100°F Design Temperature
 - * 1/16" Corrosion Allowance
 - * 1"NPT Inlet, 2"NPT Outlet & ½"NPT Drain

**** Alberta Boilers Branch Registration**

HIGH LEVEL SHUT DOWN HLSD-110

- 1, **RJV** 2" x 1"NPT Fuel Gas Shut-Off Valve
 - * Model FGSV 5100M
 - * Forged Steel Body
 - *Integrated Demister Wrap**
316 SST Wire Mesh / 3/8" Thickness
C/w Non-Stick Valve Seat Surface
 - * 2" x 10" PVC Float

FUEL GAS FILTER F-110



- 1, **Headline** ½"NPT Model #360A
 - * Anodized Aluminum Bowl, Anodized Aluminum Bulkhead
 - * Stainless Steel, Nylon & Viton Internals
 - * 250 psig Maximum Operating Pressure
- ** c/w 1- P/N 25-64-70C Elements**

Cont' d.

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EQUIPMENT LIST

HEATER

H-400/401
SSOV-400401
TCV-400/401
PRV-400/401
PRV-401/401



- 2, **Cata-Dyne** Bx24x24, 20,000 BTU
- * 12 VDC
- * Natural Gas
- * 2, Safety Shut-Off Valves
- * 2, Thermostat
- * 2, Fisher Type 912 Regulator
- * 2- Maxitrol Appliance Regulator
- * 2- 24" x 24" Personnel Protection Grill
- * 2- Vent Hood, Piped Outside c/w Ducting & Rain Cap
- * 2- 12 VDC Electrical Wiring To Skid Edge Junction Box As Per CEC Regulations, and c/w...
- * 2- 25 foot Start-Up Cables Coiled On Bracket Mounted To Exterior Building Wall in a Lockable Battery Cable Cabinet

METHANOL INJECTION PUMP **P-300**

- 1, **Bruin** Model BR5103 Chemical Injection Pump **c/w Pneumatic Micro Valve ** Oil less Pump ****
- * 3/8" Stainless Steel Plunger / Hard Packings
- ** **6000 psi** Maximum Discharge Pressure
- ** 16.8 GPD Maximum Volume (at 0 psi BP)
- *** Skid Mounted On Channel Iron Stand
- * C/w 18" x 18" x 1" Drip Tray Pan

TEMPERATURE INDICATOR

TI-100

- 1, **Trend** Model 33
- * 3" Dial * 40/160° F., Dual Scale
- * c/w 304 Stainless Steel Thermowell
- ** 4" Stem on Separator

PRESSURE INDICATOR

PI-100

- 1, **Winters** #233.54
- * 4" Dial, 1/2"NPT Bottom Connection
- * 316 SST Tube, Tip, Socket & Case
- ** **0-1,500 psi** DS, LF,
- *** c/w Panam 1/2"NPT Integral Bleed Valves

PI-110,
PI-111
PI-112
PI-300

- 4, **Wika** #233.53* 2 1/2" Dial, 1/4"NPT Bottom Connection
- * 316 SST Tube, Tip, Socket & Case * Dual Scale, Liquid Filled
- ** **0-200 psi** - On Fuel Gas Scrubber
- ** **0-200 psi** - On ESDV-100 Regulator
- ** **0-60 psi** - On PZV-100 Regulator
- ** **0-60 psi** - On Injection Pump Regulator
- *** c/w Panam 1/4" NPT Carbon Steel Isolation Needle Valves

Cont' d.

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EQUIPMENT LIST

WATER STORAGE TANK TK-150

- 1, **AT&S** 19,500 Double Wall Combination Liquids & Methanol Tank
Steel Horizontal Storage Tank
***** 100 BBL (15000L) Liquids Storage &
a 1000 gallon (4500L) Methanol Storage**
Designed And Constructed Using ULC-603.1 As A
Guideline, c/w A Manufacturers Label, And As Follows...
 - * *Dimensions;* 8'-6" Dia. x 12'-6" Shell Length
 - * *Ends;* Flat & Flanged ASTM A36 3/16" Thick
 - * *Primary Shell;* ASTM A36 3/16" Thick
 - * *Secondary Sell;* ASTM A36 10-11 Gauge Thick /300° Wrap
 - * *Design Pressure;* 2.0 psi
 - * (2) 6" 150# ANSI RFSOF; -(2) Vent Nozzles
 - * (2) 4"NPT Tank Flange; -(1) Inlet Nozzle
-(1) Spare c/w Plug
 - * (1) 3"NPT 3,000# Coupling; -(1) Suck Out Nozzle
 - * (1) 2"NPT 3,000# Coupling; -(1) LSH Nozzle (Future)
 - * (1) 2"NPT 3,000# Coupling; -(1) Fill / Discharge Nozzle Methanol
 - * (3) ½"NPT 3,000# Coupling -(2) Primary Tank LG Nozzles
-(1) Interstice Monitor LG Nozzle / * (1) Name Plate
 - * *Vacuum Test Interstice In Accordance With ULC*
 - * *Air-Soap Test Primary Tank To 2.9 - 4 psi*
 - * (2) Steel Tank Saddles c/w Straps
 - * *Interior Finish;* Nil
 - * *Exterior Finish;* 1 Coat Of Black Gilsonite/Neotar Paint
 - * C/w Double Walled Manway 36" High x 24" Wide
- 1, 8" 150# Inlet Muffler Style Diffuser c/w
Mist Baffle Pipe Installed Near End of Tank Before 6" Vents
c/w 2"NPT Connection For Inlet Piping Connection
- 1, 3"NPT Sch.40 ASTM A106-B Suck Out Line From Tank
Suck Out Nozzle, c/w 3"NPT Black Malleable 90° Elbow,
3"NPT Clip Gate Valve, And Run To Skid Edge c/w 3"
Aluminum Type "F" Camlock Fitting & Type "DC" Camlock
Dust Cap
- 1, 2"NPT Sch.80 ASTM A106-B Load Line In / Out From Tank
c/w 2"NPT Black Malleable 90° Elbow,
2"NPT Ball Valve, And Run To Skid Edge c/w 2"
Aluminum Type "F" Camlock Fitting & Type "DC" Camlock
Dust Cap
- 2, 6" .125" W.T. ERW Vent Pipes From Tank Vent Nozzles,
Extended Through Building Roof, And c/w 6" 150# ANSI
RFWN Flange At Bottom End For Connection To Nozzles And
45° Scarf Cut At Top End c/w Bird Screens
- 1, 4"NPT Coupling For Level Gauge Board Installation
- 1, 2"NPT Piping to Skid Edge for Methanol Vent

Cont' d.

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EQUIPMENT LIST

LEVEL GAUGES

LG-300

- 1, **Louvers & Gauges** Level Gauge Glass
* Primary Tank Level Gauge
* 84" Visible Length

LG-400

- 1, **Louvers & Gauges** Level/Metering Gauge Glass
* Methanol Tank Level Gauge
* 84" Visible Length

LG-310

- 1, **Louvers & Gauges** 5250 Indicating Sight Glass
* Interstice Monitor (Secondary Containment) Sight Gauge
* 3" Horizontal Visible Length

METHANOL FILTER

FI-150

- 1, **LUBRIFINER** Methanol Filter Water / Particulate Filter
* Cast Iron 1" Npt Spin on Head
* Spin On Type Cartridge

HIGH LEVEL SWITCH

LSHH-300

- 1, **Kimray** 2" NPT Model 2220 LSL Electric Level Switch
* **C/w Manual Reset Button * 12/ 24 Volt**
* *Body;* 303 Stainless Steel Body
* *MWP;* 1500 psi MWP
* *Design Code;* ANSI B31-3
* *Float;* 316 Stainless Steel
** *Float Arm;* Stainless Steel

PRESSURE REGULATORS

PRV-300

- Fuel Gas:** 1, **Fisher** 1"NPT Type P630
* Cast Iron Body
* 1/8" Stainless Steel Orifice/Trim
* Standard Service
* 90-150 psig Spring Range
** **Set @ 100 psig**

- Instrument:** 3, **Fisher** ¼"NPT Model 67CFR-362SC
* Standard Service
* Aluminum Body
* **0-35 psig** Spring Range
* Tapped Bonnet C/w Plastic Vent
** **Set @ 30 psig**
** LC-100, PZV-100,P-300 I/G Supplies

PRV-112//113/130

- Instrument:** 1, **Fisher** ¼"NPT Model 67CFR-601SC
* Standard Service
* Aluminum Body
* **0-125 psig** Spring Range
* Tapped Bonnet C/w Plastic Vent
** **Set @ 80 psig**
** ESDV-100 I/G Supply

PRV-111

Cont'd.

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EQUIPMENT LIST

VALVES: SCREWED

- Ball:** 10, **Meridian** ½" NPT 2,000 psi Fig.# H1-F05S20-S
15, **Meridian** 1" NPT 2,000 psi Fig.# H1-R10S20-S
1, **Meridian** 2" NPT 2,000 psi Fig.# H1-R10S20-S
* 316 Stainless Steel Trim - Standard
1, **Nutron** 1/2" NPT 6,000 psi Fig.# T3-R05S60-SRC
C/w Spring Return Handle
- Needle:** 8, **Panam** ¼"NPT 6,000 psi Carbon Steel
3, **Panam** ½"NPT 6,000 psi Carbon Steel
1, **Panam** ½" NPT 6,000 psi Carbon Steel c/w Bleed
2, **Panam** ½" x ½" NPT 6,000 psi Multiport c/w Bleed
- Check:** 2, **Plainsman** ¼"NPT Fig.#A-676 Ball Check
** Methanol Injection Point
- 3, **Plainsman** ½" NPT 3000 psi Fig.#CB-50
Ball Type
** Scrubber Drain Line & Fuel Gas Take-off
- Check:** 2, **DHV** 1" NPT CL800#
Flapper Type
** Liquids Re-Injection Line
- Strainer:** 3, **Alberta Strainer** 1" NPT 1,480 psi WP
Fig.# YS800
**FQI-100/200/300 Turbine Piping
- Check:** 1, **Crown** 2" 600# Wafer Style Check
* 316 SST Construction
* Std Service
- Globe:** 1, **Panam** 1-1/2" Npt Class 1500#
* Globe Valve
* Carbon Steel Body * Standard Trim
* Manually Operated
- Globe:** 1, **Panam** 1-1/2" Npt Class 800
Globe Valve
* Carbon Steel Body * Standard Trim
* Manually Operated
- Globe:** 1, **Panam** 1" Npt Class 800
Globe Valve
* Carbon Steel Body * Standard Trim
* Manually Operated

Cont'd.

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EQUIPMENT LIST

SKID

RJV- 10' Wide x 23'-6" Long c/w...

- | | |
|----------------------------|---|
| * 8" @ 18 Wide Flange Beam | -Main Skid Base |
| * 6" @ 15 Wide Flange Beam | -Main Cross Beams |
| * 6" @ 8.2 Channel Iron | -Periphery & Support Beams |
| * 3/16" Checkered Plate | -Flooring |
| * 3" Sch. 80 Pipe | -Pull Bars Both Ends |
| * 3" Poly-Urethane Foam | -Under-Skid Insulation |
| * 1" Flat Plate | - Radio Mast Base Plate |
| * 1/2" Flat Plate | - Stiffening Plate For Above |
| * Rotary Mast Pole | - Antenna Pipe Mast Mounting
Bracket Mounted On Skid
Outside Building Next To
Base Plate |

BUILDING

Size: 10' Wide x 21' Long x 10' - 9'6" High Eave Height

Type: **RJV** 1 1/2" Thick Urethane Injected Panel Type c/w Shed Style Roof As Follows:

Exterior: * 26 Gauge Prepainted Steel - **White**
* Aluminum Extrusions

Interior: * R12 Insulation Value
* 26 Gauge Prepainted Steel - **White**

Door- 1, 3' Wide x 7' High Urethane Injected Panel Type c/w...
* Panic Hardware c/w Locking Cylinder
* Check Chain
* Door Sweep
* Threshold
* Weather Stripping
* Hinges

Vents: 2, 12" x 12" Insulated Aluminum Louvered c/w Screens (1-Low & 1-High)

Misc.: 1, 30" x 40" Spring Loaded Hatch In Building Wall For Water Tank Drain Valve Access
1, 30" x 24" Spring Loaded Hatch In Back Wall of Building Wall For Washing Access
1, Cut-Outs & Flashings
1, Aluminum Dog Door

Cont'd.

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SCADA AND ELECTRICAL DETAILS.

Cabinet

ELECTRICAL/SCADA



(1) **CSA Approved Class 1 Division II Nema 4 Insulated Enclosure (Black Textured Finish)**

- *Hinged/Gasket Door c/w 1/4 turn fasteners
- *Antenna Connection on Enclosure Bottom
- *Ground Lug for Building Ground Connection
- *Inside Inner Door for RTU/Radio Equipment
- *Includes backpan with terminal rail assembly, charge regulators, fuses etc.
- *Small Size: **44H X 32W X 22L**
- *Battery Box: **16H X 32W X 20D**

RTU



1, **Floboss 107**

- (1) Controller Roc107 Base Chassis, CPU Non-Isolated 6 Point I/O Board (2 Ai/Di, 2 Di/Pi, 1 AO/DO, 1DO)
- (1) Mixed I/O Card
- (1) MVS Card

Radio/Communications



- (1) Freewave 900MHZ Radio
- (1) Antenna Omni 900 MHZ 5db
- (1) 80' Coax Cable N Male/ N Female
- (20') Antenna Pole SCH.80 1.5"
- (20') Antenna Pole SCH.80 2.0"

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SCADA AND ELECTRICAL DETAILS.

Solar Power (RTU/RADIO)



- (4) 150W Watt Solar Panels
- (6) 121Ah 12V Stark Energy AGM-CI

Transmitters

MULTIVARIABLE TRANSMITTER



- Make:** 1, *Fisher MVS205E* Multivariable Transmitter
- Static Range:** 0-3626 Psig
- Differential:** 0-250 InH2O
- Temperature:** -40 to 250 °F (-40 to 121 °C)
- Manifold:** AGCO 5- Valve manifold
- Misc.:**
 - * Standard Sweet Service
 - * CSA Class 1, Div.1 Seals
 - * Modbus / RS232/485 / Class 1 Div 1 Rating
 - * Mounting Bracket

RTD



- 1, *Aircon* 3-Wire RTD Assembly
- *-50°C - 125°C Range * 2½" SST Thermowell

PRESSURE TRANSMITTER



- 2, Rosemount Gage Pressure Transmitter w/Display
- ** *Model 2088G4S22A1M5C6*
- 0-4000 psi** range
- 316L SST diaphragm
- ½" FNPT Process connection
- Mounting Bracket

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SCADA AND ELECTRICAL DETAILS.

Pumps

24V SOLAR PUMP



- 1, **MCI Solutions** Model 3401 Solar Powered Methanol Injection Pump...
- * 3/8" Plunger size * Max PSI 1500, Rate Litres / Day 0.26 - 33.2
- * N-Seal secondary containment system.
- * Stainless Steel Fluid End.
- * CSA Class 1/ Division 1 Motor/ Pump
- * Motor Controller c/w Digital Display and Key Pad Mounted in a CSA Class 1/ Division 2 located in the RTU / Battery Cabinet
- * All Wiring per CEC Regulations * C/w 18" x 18" x 1" Drip Tray Pan

Heaters (Wiring)

12V HEATER CABLE BOOSTER BOX



- 2, 12V Heater Cable Booster Boxes c/w Components

Wiring and Installation Package:

The shed wiring and installation package consists of teck cable from each end device to a SCADA control cabinet. It includes all required cable, electrical fittings and labour to wire and install all components.