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## **PSC250 Pipeline Service Compressor Specifications – Skidded Configuration**

### **PLC Control Scheme**

**Pipeline evacuation – draw target volume down to selected pressure  
Discharge pressure up to 1440 psi**

- Operator selects desired final pressure and initiates PLC control
- Operation begins with inlet connected to reciprocating compressor and Screw compressor offline
- The reciprocating compressor will draw pipeline pressure down to 300 psi
- At 300 psi automated ball valves will reconfigure the flow path for series operation. Inlet flowing to screw compressor, screw compressor discharge flowing to reciprocating compressor.
- A pressure reducing valve will limit screw compressor inlet to 35 psi
- PLC will control compressor speed to maintain maximum flow throughout operation
- If the operating discharge pressure is below 350 psi, the reciprocating compressor will stop and the screw compressor will continue running alone
- Compression will stop upon reaching operator selected final pressure

**Pig Pushing – Supply large volume of gas at low differential pressure  
Discharge pressure up to 1440 psi**

- Operator selects operating pressure limits (upper and lower) and speed (if desired)
- The Compressor will operate with inlet connected directly to the reciprocating compressor
- Screw compressor will be left offline and isolated from pressure
- PLC will control compressor speed to stay within operational limits

### **Screw Compressor**

|             |   |
|-------------|---|
| Type        | Oil flooded rotary screw gas compressor |
| Model       | TMIC SCG14                              |
| Suction P   | 50 psi maximum                          |
| Discharge P | 350 psi maximum                         |
| Vi          | 1.9 or 3.1 or 4.6 (Variable)            |
| Drive       | Hydraulic Variable Speed Closed Loop    |
| Oil filter  | Donaldson Duramax                       |

### **Reciprocating Compressor**

|             |                                      |
|-------------|--------------------------------------|
| Type        | 2 Throw single stage reciprocating   |
| Model       | Arrow VRC2                           |
| Suction P   | 1600 psi maximum                     |
| Discharge P | 1600 psi maximum                     |
| Drive       | Hydraulic Variable Speed Closed Loop |

## Driver

|                   |                           |
|-------------------|---------------------------|
| Type              | Natural gas fueled        |
| Model             | PSI 10L TA                |
| Horsepower        | 262 HP @ 1800 rpm         |
| Cylinders         | 6                         |
| Displacement      | 9.73L                     |
| Compression ratio | 10.5:1                    |
| Aspiration        | Turbocharged, Intercooled |
| Ignition          | Coil on plug              |
| Radiator          | Bolted construction       |
| Silencer          | Critical Grade            |
| Governor          | Electronic                |

## Controls and Instrumentation

### PLC

- Siemens S7-1200

### Shutdowns

- Low suction pressure
- High suction pressure
- Low discharge pressure
- High discharge pressure
- High compressor discharge temperature
- Low engine oil pressure
- High engine coolant temperature
- ESD

### Warnings

- Compressor oil filter differential pressure
- Oil coalescing element differential pressure

### Indicators

- PLC – Web HMI
- Engine rpm
- Hour meter
- Engine oil pressure
- Engine fuel pressure
- Inlet pressure
- Screw Suction pressure
- Inter-stage Pressure
- Discharge pressure
- Compressor discharge temperature
- Oil coalescing element differential pressure
- Separator level
- Engine oil level
- Engine glycol level
- Engine vacuum pressure
- Engine glycol temperature

## Screw Compressor Cooling System

|            |                                    |
|------------|------------------------------------|
| Type       | Aftercooler/oil cooler combination |
| Model      | Global Heat Transfer AOX-100       |
| Rating     | 408 psi @ 250 °F                   |
| CRN        | All of Canada                      |
| Thermostat | Set @ 180 °F                       |

## Reciprocating Compressor Cooling System

|        |   |
|--------|---|
| Type   | Brazed finned Tube, all stainless steel |
| Model  | Kimkool ACPACK                          |
| Rating | 1600 psi @ 400 °F                       |
| CRN    | All of Canada                           |

## Inlet/Outlet

|                           |                               |
|---------------------------|-------------------------------|
| Inlet flange              | 3" 600# RFF                   |
| Outlet flange             | 3" 600# RFF                   |
| Inlet valve               | 3" FP ball valve              |
| Discharge check           | 2" Piston check               |
| Inlet pressure protection | 3" ESD on low pressure piping |

## Oil Separator

|                     |                          |
|---------------------|--------------------------|
| Rated pressure      | 400 psi @ 250 °F         |
| Size                | TBD                      |
| Design code         | ASME Sect VIII, Div I    |
| PSV                 | 400 psi                  |
| Corrosion allowance | TBD                      |
| Sight glass         | Glass 10" viewing length |
| CRN                 | All of Canada            |

## Piping

|   |                                     |
|---|-------------------------------------|
| Process piping                                  | SA-106B Welded piping               |
| Other piping                                    | SA-106B threaded spools             |
| Vent header                                     | Header for PSVs, and auto blow down |
| All process valves flanged for easy replacement |                                     |

## Enclosure

|                |  |
|----------------|--|
| Dimensions     | Length 30', width 8'4", height 8'5" (Current Estimate)             |
| Weight         | estimated 18000lbs   |
| Service doors  | 1 - engine, 1 – compressor, additional removable panels for access |
| Lighting       | Div 2 rated in process compartment, exterior floodlights           |
| Louvers        | 4 gravity louvers, lockable for transport                          |
| Coating        | Galvanized steel   |
| Sound proofing | Critical Grade Muffler<br>Low Speed Cooling fans                   |

## Compliance

|                |                                      |
|----------------|--------------------------------------|
| Process Piping | B31.3                                |
| Electrical     | CSA C22.1 (Canadian Electrical Code) |

## Optional

Additional Coalescer before final discharge valve  
 Acoustic louvers for air intake and exhaust  
 3.0" compressor cylinders – reduce maximum discharge P to 1100 psi, but increase capacity

## Expected Performance

|                             |    | SCG14 (screw only)        |      |      |      |      |
|-----------------------------|----|---------------------------|------|------|------|------|
|                             |    | Discharge pressure (psig) |      |      |      |      |
| Inlet<br>Pressure<br>(psig) |    | 150                       | 200  | 250  | 300  | 350  |
|                             | 0  | 684                       | 668  | 590  | 527  | 487  |
|                             | 25 | 1301                      | 1163 | 1046 | 946  | 864  |
|                             | 50 | 1510                      | 1355 | 1229 | 1110 | 1006 |

Flow (mscfd)

|                             |     | SCG14 + Arrow 2.5"        |      |     |      |      |      |
|-----------------------------|-----|---------------------------|------|-----|------|------|------|
|                             |     | Discharge pressure (psig) |      |     |      |      |      |
| Inlet<br>Pressure<br>(psig) |     | 500                       | 700  | 900 | 1100 | 1300 | 1440 |
|                             | 0   | 650                       | 590  | 550 | 500  | 478  | 370  |
|                             | 50  | 1110                      | 1020 | 975 | 910  | 730  | 370  |
|                             | 300 | 1245                      | 1020 | 975 | 910  | 730  | 370  |

Flow (mscfd)

|                             |     | SCG14 + Arrow 3.0"        |      |      |      |
|-----------------------------|-----|---------------------------|------|------|------|
|                             |     | Discharge pressure (psig) |      |      |      |
| Inlet<br>Pressure<br>(psig) |     | 500                       | 700  | 900  | 1100 |
|                             | 0   | 710                       | 660  | 610  | 550  |
|                             | 50  | 1330                      | 1270 | 1190 | 1160 |
|                             | 300 | 1963                      | 1723 | 1500 | 1303 |

Flow (mscfd)