



Toase-eh Park Sanati Gohar Ofogh
Petrochemical Co.
**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**



Document Title: Package / Compressor Data Sheet

Document No.: EI027-HSE-VD –GE–DSH–001- R1

Rev. R1

Page 1 of 7

General Comments:

1- Vendor shall issue the "Duty Specification" for this package and mention it in this data sheet. Moreover more clarification about equipments shall represented in that document.

Vendor Reply 17-Feb-24: Duty specification is issued by esteemed Client and we have issued package Data Sheet based on agreements made during the meeting and scope of supply agreements, accordingly duty specification can not be issued by vendor and client can refer to this document as per this Data Sheet.

2- Vendor shall issue the P&ID for this package. There are some items that need to be specify in the P&ID, i.e. Instrument items, size of the lines and

Vendor Reply 17-Feb-24: Noted. This is part of VPIS agreed with Client.

3- Vendor shall issue the "Equipment List" document for this package and specify all required equipment in that document with their specification.

Vendor Reply 17-Feb-24: VPIS has been agreed with Client during the meeting and this Document (Package data sheet) is our Equipment List.

4- Safety Equipment Specifications shall be submitted.

Vendor Reply 17-Feb-24: This is not applicable in this Package.

5-Field Instrument Specifications shall be submitted.

Vendor Reply 17-Feb-24: This will be submitted as Instrument Data sheet in approved VPIS.

Document Title:

Package / Compressor Data Sheet

| Rev. | Issued Date | DESCRIPTION | PREPARED | CHECKED | APPROVED |
|------|-------------|-------------|----------|---------|----------|
| R1 | 05-02-2024 | IFA | F.SH | M.O | A.M |
| R0 | 09-09-2023 | IFA | N.B | F.SH | A.M |



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Page 2 of 7

REVISION RECORD SHEET

| Page Page | Revisions | | | | | | | Page | Revisions | | | | | | |
|--------------|-----------|----|----|----|----|----|----|------|-----------|----|----|----|----|----|----|
| | R0 | R1 | R2 | R3 | R4 | R5 | R6 | | R0 | R1 | R2 | R3 | R4 | R5 | R6 |
| 1 | X | X | | | | | | 41 | | | | | | | |
| 2 | X | X | | | | | | 42 | | | | | | | |
| 3 | X | X | | | | | | 43 | | | | | | | |
| 4 | X | X | | | | | | 44 | | | | | | | |
| 5 | X | X | | | | | | 45 | | | | | | | |
| 6 | X | X | | | | | | 46 | | | | | | | |
| 7 | X | X | | | | | | 47 | | | | | | | |
| 8 | | | | | | | | 48 | | | | | | | |
| 9 | | | | | | | | 49 | | | | | | | |
| 10 | | | | | | | | 50 | | | | | | | |
| 11 | | | | | | | | 51 | | | | | | | |
| 12 | | | | | | | | 52 | | | | | | | |
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| 14 | | | | | | | | 54 | | | | | | | |
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| 17 | | | | | | | | 57 | | | | | | | |
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| 30 | | | | | | | | 70 | | | | | | | |
| 31 | | | | | | | | 71 | | | | | | | |
| 32 | | | | | | | | 72 | | | | | | | |
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| 34 | | | | | | | | 74 | | | | | | | |
| 35 | | | | | | | | 75 | | | | | | | |
| 36 | | | | | | | | 76 | | | | | | | |
| 37 | | | | | | | | 77 | | | | | | | |
| 38 | | | | | | | | 78 | | | | | | | |
| 39 | | | | | | | | 79 | | | | | | | |
| 40 | | | | | | | | 80 | | | | | | | |

|   | | Package data sheet | |   | | | |
|---|---|--|--|---|--|-------------|----------------------------------|
| Document Title: Package / Compressor Data Sheet | | Rev.R1 | | Date:05.02.2024 | Page 03 Of 07 | | |
| Document No.: EI027-HSE-VD-ME-DSH-001- R1 | | | | | | | |
| Customer | | PETRO ELECTRIC | | | | | |
| Plant Name/Project Name | | RU-0001 A/B | | | | | |
| Item No./Name | | CHILLER UNIT | | No.of Required | 2 Unit(s) | | |
| OPERATING CONDITION (PROCESS) – BASED ON CUSTOMER DS / PER EACH COMP. UNIT | | | | | | | |
| | | Design | IN | OUT | Main & side flow Composition | | |
| Fluid | (degC) | Styrene | 15.2 | 5 | | | |
| Capacity | kW | 165 | | | | | |
| Evaporating Temp. | (degC) | 0 | | | | | |
| Condensing Temp. | (degC) | 56 | | | | | |
| Side Temp. | (degC) | | | | | | |
| COMPRESSOR DESIGN CONDITION (BASED ON MAYEKAWA CALCULATIONS) / PER EACH COMP. UNIT | | | | | | | |
| Design | | Design | | Note | | | |
| Compressor Model | | | | | | | |
| Motor Speed | (rpm) | 2950 | | | ※Motor Speed = Compressor Speed | | |
| Comp Load | () | 100 | | | | | |
| Quantity | | 1 | Per unit | | | | |
| Capacity/unit | kW | 165 | | | | | |
| Power/unit | (kW) | 120 | | | * Compressor BkW | | |
| Driver | | Motor | | | | | |
| Stating Method | | Direct | | | | | |
| Capacity Control | Control Source | *** | | | | | |
| | Range of Control | 30-100 | | | | | |
| | Control Method | Slide Valve | | | | | |
| SITE CON | | | | | | | |
| Location | <input type="checkbox"/> Indoor (heated) <input checked="" type="checkbox"/> Outdoor under Shelter (Prov <input checked="" type="checkbox"/> Normal weather condition (Temp. +5°C TO +48°C | | | | e 2 IIB T3 | | |
| Noise | <input checked="" type="checkbox"/> Noise Level 85dB(A) at 1m from Unit | | | | | | |
| Oil Separation | 1st Separation | | | | | | |
| MATERIAL DESIGN | | | | | | | |
| Code & Standard | Item | Material | Design | | Remarks | | |
| | Unit System | <input type="checkbox"/> JIS | <input checked="" type="checkbox"/> MYK Standard | | JIS = Japanese Industrial Standards | | |
| | Compressor | <input checked="" type="checkbox"/> JIS | <input checked="" type="checkbox"/> MYK Standard | | | | |
| | Press Vessel | <input checked="" type="checkbox"/> AD/MYCOM STD | <input type="checkbox"/> ISO | <input type="checkbox"/> PED <input checked="" type="checkbox"/> MYK Standard | | | |
| | Heat Exchanger | <input checked="" type="checkbox"/> AD/MYCOM STD | <input type="checkbox"/> ISO | <input type="checkbox"/> PED <input checked="" type="checkbox"/> MYK Standard | | | |
| | Valve | <input checked="" type="checkbox"/> DIN <input checked="" type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> PED <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ISO | DIN = Germany Industrial Standards | | |
| | Safety Valve | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ASRAE | Single Type | | |
| | Piping | <input checked="" type="checkbox"/> DIN <input checked="" type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input checked="" type="checkbox"/> Manufacture's Std. | Piping inside the Compressor Skid is as per MYCOM STD, Tie in as per Project specification | | |
| | Flange | <input checked="" type="checkbox"/> DIN <input checked="" type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> JIS | Piping inside the Compressor Skid is as per MYCOM STD, Tie in as per Project specification | | |
| | Thread Connection | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> PT <input type="checkbox"/> NPT | | | |
| | MOTOR | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> JIS <input checked="" type="checkbox"/> IEC <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ISO | | | |
| | Instrumentation | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> JIS <input checked="" type="checkbox"/> IEC <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ISO | | | |
| | Control Panel | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> JIS <input type="checkbox"/> IEC <input type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ISO | 1 set of S7 1200 Common for the Unit | | |
| | Cable & wiring | <input type="checkbox"/> DIN <input type="checkbox"/> ASME | <input type="checkbox"/> ISO | <input type="checkbox"/> JIS <input checked="" type="checkbox"/> IEC <input checked="" type="checkbox"/> Manufacture's Std. <input type="checkbox"/> ISO | | | |
| UTILITY | | | | | | | |
| Electricity | | Rated Power (kW) | | Volte (V) | Frequency (Hz) | Phase | Note |
| | | Value | Q'ty | | | | |
| | Compressor Power | 120 | 1 | LV | 50 | 3 | Compressor shaft power Rpm, 2950 |
| | Oil Pump Motor for CP | 2.5 | 1 | LV | 50 | 3 | CP = Compressor Pump |
| | SB Oil Pump Motor for CP | n/a | | | | 3 | SB = Stand-by |
| | Control Panel | | | DC24V | | 1 | |
| Oil Heater | 1.5kW | | | | 3 | | |
| Cooling Water | Temp. (degC) | in NA | | return NA | | | |
| | Press. (barG) | in | | | | | |
| | Flow Rate (m3/hr) | × 1 | | Fouling Factor | TBA | m2h°C/kcal | |
| Instrument | Press. (barG) | *** | Temp. (degC) | *** | Flow Rate (Nm3/hr) | Approx. *** | |

According to the "Duty Specification" document, "outdoor without any shelter" shall be considered.

Vendor Reply 17-Feb-24: Please refer to our KOM and withdraw the Comment.



Package data sheet



Document Title: Package / Compressor Data Sheet

Document No.: EI027-HSE-VD-ME-DSH-001- R1

Rev.R1

Date:05.02.2024

Page 04 Of 07

Scope of Supply and Work (1/3) - Two Refrigeration Packages Each One including following items:

| No | Item | Scope | Q'ty | Remarks |
|----|--------------------------------|-------|------|--|
| 1 | MYCOM Compressor | | 1 | Compressor Skid |
| | | | | model P160VSD-M |
| | Compressor | | | Casing / Rotor : Cast iron / Ductile Iron, O-rings Viton |
| | Electric motor for compressor | ■ | 1 | Rated power 120k , LV, 50 Hz IP55 Exec Suitable for Zone 2 |
| | Oil Pump | ■ | 1 | For Each Compressor |
| | Electric motor for Oil Pump | ■ | 1 | 2.5 kW IP55 / Class F/B |
| | 1st Oil separator | ■ | 1 | Horizontal drum type primary fine oil separator |
| | | | | Shell : Carbon Steel / Design Cord : PED |
| | Oil cooler | ■ | 1 | MYCOM STD Refrigerant Cooled |
| | | | | |
| | Oil filter | ■ | 1 | Shell : Carbon Steel For Each Compressor |
| | Oil heater | ■ | 1 | 1.5 kW For Each Compressor |
| | | | | |
| | Condenser Air Cooler | ■ | 1 | |
| | Evaporator | ■ | 1 | |
| | Expansion Valve of Evaporator | ■ | 1 | |
| | | | | |
| | Dryer Filter | ■ | 1 | |
| | Suction Filter | ■ | 1 | |
| | Control panel | ■ | 1 | Siemens S7-1200 PLC for safe area common for complete system |
| | Instruments IP65, Ex execution | ■ | 1set | 1) Suction/Discharge check valves (SC) 2) Single Safety valve for compressor on oil separators (CS) 3) ATEX coupling (main coupling and oil pump) , non sparking 4) Instrumentation Exd and will be As per MYCOM STD 5) Instruments to be mounted locally |
| | Junction Box Exe | ■ | | Per Mfr Std, qty: 1 pce, Exe |
| | | | | Direct feeder for Package Electrical users to be provided by client |
| | | | | |
| | | | | |

Some items of this page need to be specified in the "Duty Specification" document, i.e. oil heater, oil filter and ...

Moreover, Instrument items will be check in the P&ID

Vendor Reply 17-Feb-24: These Items are part of MYCOM Compressor Package and Compressor package Data Sheet and Drawing is already provided as per approved VPIS.



Package data sheet



Document Title: Package / Compressor Data Sheet

Document No.: EI027-HSE-VD-ME-DSH-001- R1





Rev.R1

Date:05.02.2024

Page 05 Of 07

Scope of Supply and Work (2/3):

| No | Item | Scope | Q'ty | Remarks |
|----|---|-------------------------------------|-------|---|
| | Piping , Tubing Work & Valves | | | |
| | Within skid / Shop Work | <input checked="" type="checkbox"/> | 1set | CS material |
| | Between skids / Site Work | <input type="checkbox"/> | | <div style="border: 1px solid green; padding: 5px;"> <p>According to General Comment number 2, size of the pipes will be checked in the P&ID document</p> <p>Vendor Reply 17-Feb-24: To be discussed in P&ID please withdraw this comment.</p> </div> |
| | To others / site Work | <input type="checkbox"/> | | |
| | Electric Wiring Work | | | |
| | Wiring within skid / Shop Work | <input checked="" type="checkbox"/> | 1 set | <div style="border: 1px solid green; padding: 5px;"> <p>More specification shall be represented in the "Duty Specification" document</p> <p>Vendor Reply 17-Feb-24: Please refer to above replies, Duty specification is not a part of Vendor Documents.</p> </div> |
| | Wiring between skids / Site Work | <input type="checkbox"/> | | |
| | Wiring to others / site Work | <input type="checkbox"/> | | |
| | Thermal insulation, personal protection and fire protection | | | |
| | Engineering | <input checked="" type="checkbox"/> | | |
| | Shop work | <input type="checkbox"/> | | |
| | Field work | <input type="checkbox"/> | | |
| | Ladder, Platform and Structure / Maintenance accessory | | | |
| | Material | <input type="checkbox"/> | | |
| | Shop work | <input type="checkbox"/> | | |
| | Field work | <input type="checkbox"/> | | |
| | Heat/Steam tracing | | | |
| | Material | <input type="checkbox"/> | | By Client |
| | Shop work | <input type="checkbox"/> | | |
| | Field work | <input type="checkbox"/> | | |
| | Acoustic Enclosure | <input type="checkbox"/> | | Not For this Size Machine Not Required |

| | | |
|---|------------------------------|---|
|   | Compressor Data sheet |   |
| Document Title: Package / Compressor Data Sheet | | |
| Document No.: EI027-HSE-VD-ME-DSH-001- R1 | Rev.R1 | Date:05.02.2024 Page 07 Of 07 |

MYCOM SCREW COMPRESSOR PERFORMANCE SINGLE STAGE (BOOSTER)

| | | | | |
|---------------------------------|-----------|-------|-------|-------|
| Title : | | | | |
| MODEL : | P160VS*-M | | | |
| REFRIGERANT : | PROPANE | | | |
| RECOMMENDED PORT : | | M | M | M |
| Vi : | [-] | 3.64 | 3.64 | 3.64 |
| COMPRESSION RATIO : | [-] | 4.37 | 4.37 | 4.37 |
| CAPACITY : | [kW] | 196.1 | 171.4 | 151.3 |
| CAPACITY : | [TR] | 55.8 | 48.7 | 43.0 |
| ABSORBED POWER : | [kW] | 98.2 | 91.2 | 85.6 |
| DRIVE SHAFT SPEED : | [min-1] | 2950 | 2950 | 2950 |
| COMPRESSOR SPEED : | [min-1] | 2950 | 2950 | 2950 |
| INDICATOR POSITION : | [%] | 90.0 | 80.0 | 70.0 |
| CONDENSING TEMP. : | [degC] | 56.0 | 56.0 | 56.0 |
| EVAPORATIVE TEMP. : | [degC] | 0.00 | 0.00 | 0.00 |
| SUCTION SUPERHEAT : | [degC] | 0.00 | 0.00 | 0.00 |
| LIQUID SUBCOOLING : | [degC] | 0.00 | 0.00 | 0.00 |
| SUCTION TEMP. : | [degC] | 0.00 | 0.00 | 0.00 |
| OIL SUPPLY TEMP. : | [degC] | 50.0 | 50.0 | 50.0 |
| SUCTION PRESS. : | [MPaA] | 0.466 | 0.466 | 0.466 |
| DISCHARGE PRESS. : | [MPaA] | 2.03 | 2.03 | 2.03 |
| OIL SUPPLY PRESS. : | [MPaA] | 2.23 | 2.23 | 2.23 |
| SUCTION PRES. DROP : | [MPa] | 0.005 | 0.005 | 0.005 |
| DISCHARGE PRES. DROP : | [MPa] | 0.050 | 0.050 | 0.050 |
| SWEPT VOLUME : | [m3/h] | 415 | 415 | 415 |
| LOAD (SUCTION VOL. FLOW RATE) : | [%] | 86.5 | 75.6 | 66.7 |
| DISCHARGE TEMP. : | [degC] | 68.6 | 69.2 | 69.7 |
| REFRIG. FLOW RATE SUC. : | [m3/h] | 317 | 277 | 245 |
| REFRIG. FLOW RATE DIS. : | [m3/h] | 75.1 | 65.9 | 58.4 |
| REFRIG. FLOW RATE SUC. : | [kg/h] | 3213 | 2808 | 2479 |
| REFRIG. FLOW RATE DIS. : | [kg/h] | 3213 | 2808 | 2479 |
| INJECT. OIL FLOW RATE : | [L/min] | - | - | - |
| LUB. OIL FLOW RATE : | [L/min] | 44.9 | 44.9 | 44.9 |
| F. SIDE OIL FLOW RATE : | [L/min] | 8.33 | 8.33 | 8.33 |
| *TOTAL* OIL FLOW RATE : | [L/min] | 53.2 | 53.2 | 53.2 |
| OIL HEAT REJECTION : | [kW] | 28.0 | 28.9 | 29.7 |
| OIL SPEC HT : | [J/kgK] | 1930 | 1930 | 1930 |
| OIL DENSITY : | [kg/m3] | 880 | 880 | 880 |
| COP : | [-] | 2.00 | 1.88 | 1.77 |
| Elevation : | [m] | NA | NA | NA |
| Atmospheric : | [MPa] | NA | NA | NA |

--- SUPER HEAT is NOT counted in refrigeration capacity ---

--- WITH THERMO-SIPHON OIL COOLER ---

--- NO OIL INJECTION ---

--- When choosing the motor set a safety factor of more than 10% for the brake power. ---

--- Please check carefully the operating range. ---

--- Reference temperature : Dew Point ---

*** MYCOMW27 compressor performance table is valid until the end of Mar, 2024. ***