



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



Document Title: Process Flow Diagram (PFD)

Document No.: EI027-HSE-VD – PR– PFD– 001-R1

Rev. R1

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# STYRENE PARK OFFSITE

**Document Title:**  
**Process Flow Diagram (PFD)**

| Rev. | Issued Date | DESCRIPTION | PREPARED | CHECKED | APPROVED |
|------|-------------|-------------|----------|---------|----------|
| R1   | 15-06-2024  | IFA         | F.SH     | M.O     | A.M      |
| R0   | 28-04-2024  | IFA         | F.SH     | M.O     | A.M      |



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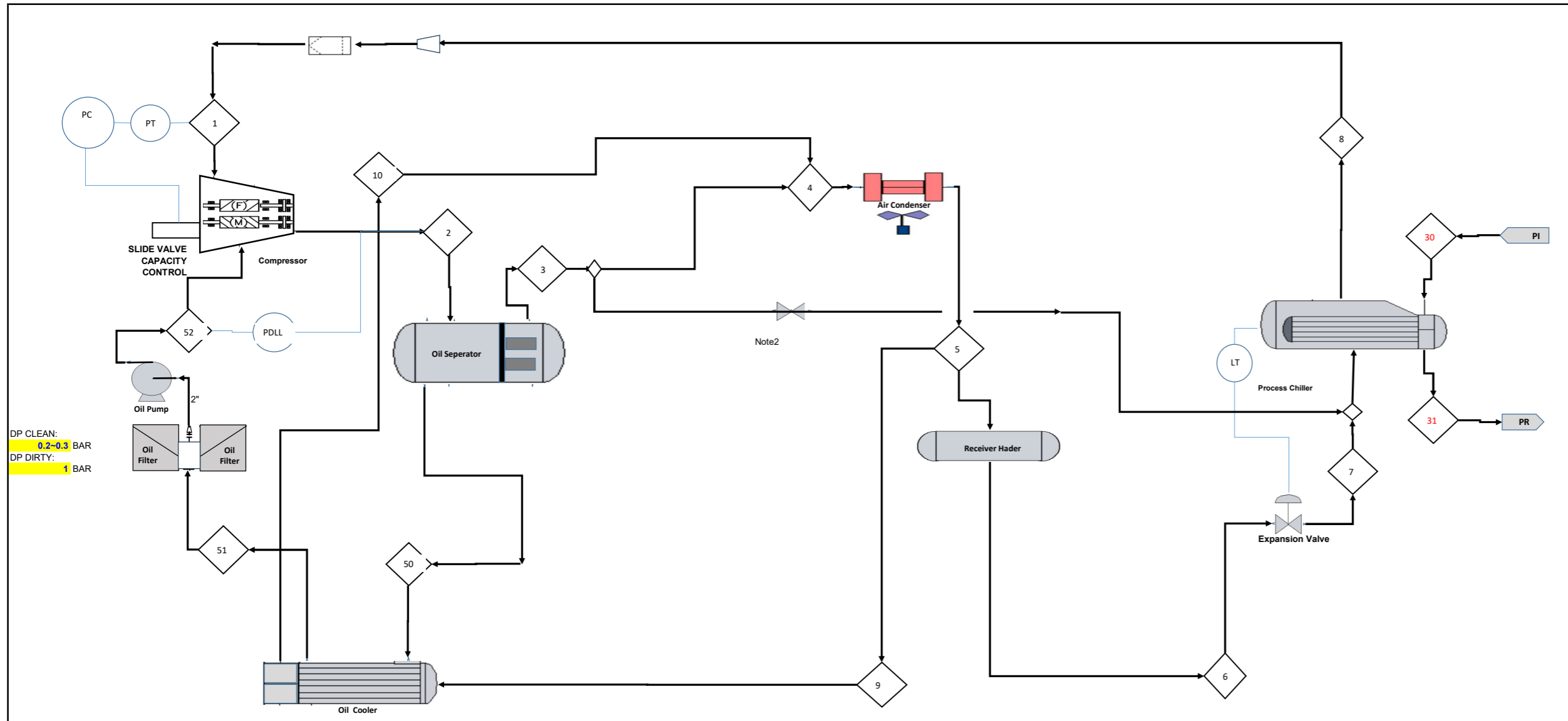
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**REVISION RECORD SHEET**

| Page<br>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            |           |    |    |    |    |    |    | 44   |           |    |    |    |    |    |    |
| 5            |           |    |    |    |    |    |    | 45   |           |    |    |    |    |    |    |
| 6            |           |    |    |    |    |    |    | 46   |           |    |    |    |    |    |    |
| 7            |           |    |    |    |    |    |    | 47   |           |    |    |    |    |    |    |
| 8            |           |    |    |    |    |    |    | 48   |           |    |    |    |    |    |    |
| 9            |           |    |    |    |    |    |    | 49   |           |    |    |    |    |    |    |
| 10           |           |    |    |    |    |    |    | 50   |           |    |    |    |    |    |    |
| 11           |           |    |    |    |    |    |    | 51   |           |    |    |    |    |    |    |
| 12           |           |    |    |    |    |    |    | 52   |           |    |    |    |    |    |    |
| 13           |           |    |    |    |    |    |    | 53   |           |    |    |    |    |    |    |
| 14           |           |    |    |    |    |    |    | 54   |           |    |    |    |    |    |    |
| 15           |           |    |    |    |    |    |    | 55   |           |    |    |    |    |    |    |
| 16           |           |    |    |    |    |    |    | 56   |           |    |    |    |    |    |    |
| 17           |           |    |    |    |    |    |    | 57   |           |    |    |    |    |    |    |
| 18           |           |    |    |    |    |    |    | 58   |           |    |    |    |    |    |    |
| 19           |           |    |    |    |    |    |    | 59   |           |    |    |    |    |    |    |
| 20           |           |    |    |    |    |    |    | 60   |           |    |    |    |    |    |    |
| 21           |           |    |    |    |    |    |    | 61   |           |    |    |    |    |    |    |
| 22           |           |    |    |    |    |    |    | 62   |           |    |    |    |    |    |    |
| 23           |           |    |    |    |    |    |    | 63   |           |    |    |    |    |    |    |
| 24           |           |    |    |    |    |    |    | 64   |           |    |    |    |    |    |    |
| 25           |           |    |    |    |    |    |    | 65   |           |    |    |    |    |    |    |
| 26           |           |    |    |    |    |    |    | 66   |           |    |    |    |    |    |    |
| 27           |           |    |    |    |    |    |    | 67   |           |    |    |    |    |    |    |
| 28           |           |    |    |    |    |    |    | 68   |           |    |    |    |    |    |    |
| 29           |           |    |    |    |    |    |    | 69   |           |    |    |    |    |    |    |
| 30           |           |    |    |    |    |    |    | 70   |           |    |    |    |    |    |    |
| 31           |           |    |    |    |    |    |    | 71   |           |    |    |    |    |    |    |
| 32           |           |    |    |    |    |    |    | 72   |           |    |    |    |    |    |    |
| 33           |           |    |    |    |    |    |    | 73   |           |    |    |    |    |    |    |
| 34           |           |    |    |    |    |    |    | 74   |           |    |    |    |    |    |    |
| 35           |           |    |    |    |    |    |    | 75   |           |    |    |    |    |    |    |
| 36           |           |    |    |    |    |    |    | 76   |           |    |    |    |    |    |    |
| 37           |           |    |    |    |    |    |    | 77   |           |    |    |    |    |    |    |
| 38           |           |    |    |    |    |    |    | 78   |           |    |    |    |    |    |    |
| 39           |           |    |    |    |    |    |    | 79   |           |    |    |    |    |    |    |



DP CLEAN: 0.2-0.3 BAR  
 DP DIRTY: 1 BAR

- NOTES:**
- 1 Pump assembly supplied by MAYEKAWA includes the regulator
  - 2 Manual valve shall be used during startup. During operation valve shall be closed.
  - 3 For operation P and T, refer to Table

Comp. Oil Flow: 53.2 Lpm  
 14.1 GPM

| STREAM          | Unit     | 50      | 51      | 52      |
|-----------------|----------|---------|---------|---------|
| Vapour Fraction |          | 0.00    | 0.00    | 0.00    |
| Temperature     | C        | 73.50   | 60.00   | 60.00   |
| Pressure        | bara     | 20.20   | 19.70   | 22.50   |
| Mass Flow       | kg/h     | 53.20   | 53.20   | 53.20   |
| Volume          | lpm      | 624.48  | 600.17  | 600.17  |
| Heat Flow       | kW       | 0       | 0       | 0       |
| Component(s)    |          | OIL     | OIL     | OIL     |
| MW              | kg/kgmol | 500     | 500     | 500     |
| Cp              |          | -       | -       | -       |
| Z Factor        |          | -       | -       | -       |
| Density         | kg/m3    | 1005.00 | 1005.00 | 1005.00 |
| Viscosity       | cp       | 12.00   | 12.00   | 12.00   |

| STREAM          | Unit     | 1         | 2             | 3         | 4         | 5         | 6         | 7         | 8         | 9       | 10      | 30         | 31          |
|-----------------|----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|---------|------------|-------------|
| Vapour Fraction |          | 1.00      | 1.00          | 1.0000    | 1.0000    | 0.0000    | 0.0000    | 0.4294    | 1.0000    | 0.0000  | 1       | 0.0000     | 0.0000      |
| Temperature     | C        | -0.17     | 73.50         | 73.50     | 73.50     | 56.32     | 56.32     | 0.88      | -0.07     | 56.32   | 73.39   | 15.20      | 5.00        |
| Pressure        | bara     | 4.65      | 20.20         | 19.80     | 19.80     | 19.70     | 19.70     | 4.86      | 4.70      | 19.70   | 19.774  | 5.50       | 5.30        |
| Mass Flow       | kg/h     | 2,847.00  | 6,049.20      | 2,847.00  | 3,015.50  | 2,847.00  | 2,847.00  | 2,847.00  | 2,847.00  | 168.50  | 168.5   | 36,929.76  | 36,929.76   |
| Heat Flow       | kW       | -1,920.00 | -1,848.00     | -1,848.00 | -1,848.00 | -2,213.50 | -2,089.00 | -2,089.00 | -1,920.00 | -123.71 | -109.34 | -          | -           |
| Component(s)    |          | PROPANE   | PROPANE & OIL | PROPANE   | PROPANE   | PROPANE   | PROPANE   | PROPANE   | PROPANE   | PROPANE | PROPANE | STYRENE IN | STYRENE OUT |
| MW              | kg/kgmol | 44.096    | -             | 44.096    | 44.096    | 44.096    | 44.096    | 44.096    | 44.096    | 44.096  | 44.096  | -          | -           |
| Cp/Cv           |          | 1.2189    | -             | 1.3340    | 1.3340    | -         | -         | -         | -         | -       | 1.3309  | -          | -           |
| Z Factor        |          | 0.8951    | -             | 0.7475    | 0.7475    | -         | -         | -         | -         | -       | 0.7489  | -          | -           |
| Density         | kg/m3    | 10.11     | -             | 43.38     | 43.38     | 436.90    | 436.90    | -         | 10.22     | 436.90  | 40.5    | 909.60     | 918.00      |
| Viscosity       | cp       | 0.0078    | -             | 0.0106    | 0.0106    | 0.0690    | 0.0590    | -         | 0.0078    | 0.0690  | 0.01066 | 0.82       | 0.96        |

Client: [Redacted]  
 P. O. No.: [Redacted]  
 Project: REFRIGERATION PACKAGE  
 Location: [Redacted]  
 Job No.: [Redacted]  
 Unit Item Number: [Redacted]  
 Compressor Model: 160V  
 Refrigerant: PROPANE



| REVISION | DATE | DESCRIPTION |
|----------|------|-------------|
|          |      |             |
|          |      |             |

BY: Vendor 2  
 APP: Vendor 1  
 DATE: DWG: REV