



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



Document Title: Chiller (Evaporator) Data Sheet

Document No.: EI027-HSE-VD –ME–DSH–007- R0

Rev. R0

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**Commented:**

Please to be implemented and endorsed acc to below Engineering Document :

- PFD For STYREN ( EI027-000-ED-PR-PFD-501-R3)
- P&ID For STYREN ( EI027-000-ED-PR-PID-522-R4)

## STYRENE PARK OFFSITE

Please , To be submitted reply sheet and issue new revision of Chiller ( Evaporator ) Data sheet and also to be implemented our comments.

**Document Title:**

### Chiller (Evaporator) Data Sheet

Evaporator capacity shall be compatible with project documents and submitted compressors capacity.

Vendor Reply: It is confirmed that evaporator is completely match with project documents. just we have considered 10% margin on duty as the safety margin of heat exchanger. this 10% margin has been considered on each chiller.

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R0	21-02-2024	IFA	F.sh	M.O	A.M



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**REVISION RECORD SHEET**

Page Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	X							41							
2	X							42							
3	X							43							
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HTRI		HEAT EXCHANGER SPECIFICATION SHEET		Page 1
Released to the following company:		SC		SI Units
SSD		Vendor Reply: Please kindly be informed that we have confirmed and reconfirm		
Customer PAD JAM PETROCHEMICAL		Job No.		
Address		Reference No.		
Plant Location ASSALOUYEH		Proposal No.		
Service of Unit Evaporator		Date 2/21/2024		Rev 0
Size 600 - 924.32 x 2500 mm		Type BKU		Horizontal
Surf/Unit (Gross/Eff) 61.76 / 58.884 m2		Shell/Unit 1		Surf/Shell (Gross/Eff) 61.76 / 58.884 m2
		Connected In 1		Parallel 1 Series
PERFORMANCE OF ONE UNIT				
Fluid Allocation		Shell Side		Tube Side
Fluid Name		Propane		Styrene
Fluid Quantity, Total kg/hr		3104.1		40623
Vapor (In/Out)		1346.2		3104.1
Liquid		1757.8		40623
Steam				40623
Water				40623
Noncondensables				
Temperature (In/Out) C		1.22		1.00
Specific Gravity		0.5331		15.20
Viscosity mN-s/m2		0.0076 V/L 0.1295		0.0076
Molecular Weight Vapor				0.9100
Molecular Weight Noncondensables				0.9184
Specific Heat kJ/kg-C		1.7857 V/L 2.4337		1.7835
Thermal Conductivity W/m-C		0.0161 V/L 0.1090		0.0160
Latent Heat kJ/kg		375.46		375.79
Inlet Pressure kPa		480.96		300.00
Velocity m/s		0.18		0.67
Pressure Drop, Allow/Calc kPa		5.000		3.429
Fouling Resistance (min) m2-K/W		0.000170		
Heat Exchanged		183233 W		
Transfer Rate, Service		391.85 W/m2-K		Clean 524.15 W/m2
CONSTRUCTION OF ONE SHELL				
Design/Test Pressure kPaG		Shell Side 2200.0 /		Tube Side 680.00 /
Design Temperature C		Shell Side 120.00		Tube Side 85.00
No Passes per Shell		Shell Side 1		Tube Side 4
Corrosion Allowance mm		Shell Side 3.000		Tube Side 3.000
Connections		In mm 1 @ 154.05		Out mm 1 @ 77.927
Size & Rating		In mm 1 @ 102.26		Out mm 1 @ 77.927
Rating		Intermediate		@
Tube No. 188U		OD 19.050 mm		Thk(Avg) 1.651 mm
Tube Type Plain		Material SA-334 6		Length 2.500 m
Shell SA-516 70N		ID 600.00		OD mm
Channel or Bonnet SA-516 70N		Shell Cover SA-516 70N		Tube pattern 30 (Integ.)
Tubesheet-Stationary SA-350 LF2 CL.1		Channel Cover SA-516 70N		
Floating Head Cover		Tubesheet-Floating		Impingement Plate Circular plate
Baffles-Cross Carbon steel		Type Support		%Cut (Diam) Spacing(c/c) 611.90
Baffles-Long		Seal Type None		Inlet mm
Supports-Tube		U-Bend		Type Full support
Bypass Seal Arrangement		pairs seal strips		Tube-Tubesheet Joint Expanded (2 grooves)
Expansion Joint		Type None		
Rho-V2-Inlet Nozzle 91.14		kg/m-s2		Bundle Entrance Bundle Exit kg/m-s2
Gaskets-Shell Side Mach. Mtl. (Kammprofile\Flex. Face)		Tube Side Mach. Mtl. (Kammprofile\Flex. Face)		
- Floating Head Mach. Mtl. (Kammprofile\Flex. Face)				
Code Requirements		TEMA Class R		
Weight/Shell 2116.0		kg		Filled with Water 4073.4 kg
Remarks: Supports/baffle space = 3.				Bundle 872.38 kg
Material guarantee is in vendor scope.				
Full Vacuum on Shell Side and Tube Side will be considered.				
Note: Reported duty and flow rates include a user-specified multiplier of 1.10.				

Refer to client Duty Specification for Refrigeration Unit, page 5, styrene molar specific heat capacity is 167.1 and 167.4 kJ/kmol.°C at 15.2 and 5°C respectively. By considering 104.2 kg/kmol as styrene molecular weight (specified in client duty specification), mass specific heat capacity is calculated (167.1/104.2=1.604 and 167.4/104.2=1.578 kJ/kg.°C)

