



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



Document Title: Condenser Data Sheet

Document No.: EI027-HSE-VD –ME–DSH–004- R2

Rev. R2

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STYRENE PARK OFFSITE

Document Title:
Condenser Data Sheet

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R2	07-05-2024	IFA	F.sh	M.O	A.M
R1	09-04-2024	IFA	F.sh	M.O	A.M
R0	16-03-2024	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	X	X					41							
2	X	X	X					42							
3	X	X	X					43							
4	X	X	X					44							
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Manufacturer		Heat exchanged	(kW)	257.
Model no.		Surface/Item-Finned tube	(m2)	1579.2
Customer		Bare tube	(m2)	68.101
Plant location		MTD, Eff.	(Deg. C)	6.8
Service		Transfer rate-Finned	(W/m2-K)	25.56
Type draft	FORCED	Bare tube, service	(W/m2-K)	592.72
Bay size (WxL)	(m) 2.65 x 6.4	Bare tube, clean	(W/m2-K)	679.11
No. of bays/Items	1			

Basic design data

Pressure design code	ASME VIII div 1	Structural code	UBC 97
Tube bundle code stamped	No.	Flammable service	Yes.
Heating coil code stamped	No.	Lethal/toxic service	No.

Performance Data - Tube Side

Fluid name		Propane		In		Out	
Total fluid entering	(kg/hr)	3015.5	Total flow rate (Liq/Vap)	(kg/hr)	0.0000 / 3015.5	3015.5 / 0.0000	
Dew/bubble point	(Deg. C)	/	Water/Steam	(kg/hr)	0.0000 / 0.0000	0.0000 / 0.0000	
Latent heat	(kJ/kg)		Noncondensables	(kg/hr)	0.0000	0.0000	
Inlet pressure	(bar)	19.800	Molecular Wt. (Vap/Non-cond)		/	/	
Pressure drop (All/Calc)	(bar)	0.100 / 0.016	Density (Liq/Vap)	(kg/m3)	435.84 / 40.275	435.92 / 46.077	
Velocity (Allow/Calc)	(m/s)	/ 0.85	Specific heat (Liq/Vap)	(kJ/kg-C)	3.6067 / 2.2738	3.6051 / 2.3921	
Inside fouling resistance (m2-K/W)		0.000170	Thermal cond. (Liq/Vap)	(W/m-C)	0.0764 / 0.0253	0.0764 / 0.0238	
Temperature	(Deg. C)	In 73.50 / Out 56.32	Viscosity (Liq/Vap)	(cP)	0.0730 / 0.0106	0.0730 / 0.0103	

Performance Data - Air Side

Air inlet temperature	(Deg. C)	48.00	Face velocity	(m/s)	3.15
Air flow rate/item	(m3/s)	45.529	Minimum design ambient temp.(Deg. C)		5.00
Mass velocity	(kg/s-m2)		Altitude	(m)	20.000
Air outlet temperature	(Deg. C)	52.28	Static pressure	(Pa)	102.95
Air flow rate/fan	(m3/s)	26.879			

Design, Material, and Construction

Design pressure	(barG)	22 + F.V	Heating Coil	NO.
Test pressure	(barG)		No. of tubes	
Design temperature	(Deg. C)	120.00	Tube outside diameter	(mm)
Min. design metal temp.	(Deg. C)		Tube material	
Tube bundle			Fin material and type	
Size (WxL)	(m)	2.5 X 6.4	Fin thickness	(mm)
No./Bay		1	ASME Code, Sec. VIII, Div. 1	
Number of tube rows		4	Heating fluid	
Bundles in parallel		1	Heating fluid flow rate	(kg/hr)
Bundles in series			Temperature (In/Out)	(Deg. C) /
Structure mounting		Grade	Inlet pressure	(bar)
Pipe rack beams			Pressure drop (All/Calc)	(kPa) /
Ladders, walkways, platforms			Design temperature	(Deg. C)
Structure surface prep.			Design pressure	(bar)
Header surface prep.			Inlet/Outlet nozzle	/
Louver		NO.	Header	
Material			Type	Plug
Action control			Material	SA-516 Gr70(N)
Action type			Corrosion Allowance	(mm) 3
			No. of passes	4
			Tube / Tubesheet	Strength weld



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Design, Material, and Construction (continued)

Header (continued)				No./Bundle		140
Slope / Split	1% on last pass /	No		Length	(m)	6.096
Plug material	SA 350 LF2 CL.1			Pitch	(mm)	69.850
Gasket material	Soft Iron			Layout		Triangular
Nozzle				Fin		
	No.	Size, (in)	Rating/Facing	Type		Extruded
Inlet	1	4	#300	Material		Aluminum
Outlet	1	2	#300	Thickness (Base / Tip)	(mm)	1 / 0.24
Vent				Selection temp.	(C)	
Drain				Outside diameter	(mm)	57.150
Chemical Cleaning				Fin density	(fin/meter)	433.1
Min. Wall Thk.				ASME Code, Sec. VIII, Div. 1		
Tube				Customer Specifications		
Material			SA-334 6			
Tube outside diameter	(mm)		25.400			
Min wall thickness	(mm)		1.651			

Mechanical Equipment

Fan				RPM	1500	
Manufacturer	Axial Fans Int Srl (or equivalent)			Service factor		
No./Bay			2	Enclosure	Exec / IP55	
RPM	(Revs/min.)			Voltage	400	
Diameter	(ft)		7	Phase	3	
No. of blades				Cycle	50	
Angle	(degrees)			Fan noise level	(dB)	max 85
Pitch adjustment			100% Manual	Speed Reducer		
Blade material			Aluminium	Type	V- belt	
Hub material			Manufacturer Standard	Manufacturer		
@design temp	(kW)			No./Bay	2	
@min. ambient temp				Service factor		
Tip speed				Speed ratio		
Driver				Support		
Type			Electrical	Vib. switch	YES	
Manufacturer			OME ELECTRIC OR AVL	Enclosure		
No./Bay						
Driver	(kW)		7.5			

Controls - Air Side

Air recirculation			Louvers	
Degree control of outlet process temp. (Max. Cooling),+/-		/	Positioner	
Action on control signal failure			Signal air pressure (bar)	
Fan pitch			From	_____ To _____
Louvers			From	_____ To _____
Actuator air supply			Supply air pressure (bar)	
Fan			From	_____ To _____
			From	_____ To _____

Shipping

Plot area (WxL)	(m)	2.65 x 6.4	Total weight, Dry / Wet (Kg)	(Based On HTRI)	11,800 / 12,300
Bundle weight	(kg)		Shipping	(kg)	
Bay	(kg)				

1) STD. nominated power.