1- Shell entrance velocity exceeds critical velocity, indicating a probability of fluidelastic instability and flow-induced vibration damage.
2- Shell exit velocity exceeds 80% of critical velocity, indicating that fluidelastic instability and flow-induced vibration damage are possible.
3- he longest unsupported span of the bundle is in the U-bend region and thus prone to excessive vibration.

connction for level transmitter with size of 2" two be considered by vendor .please refer to related P&ID

Evaporator Data Sheet

General Notes:
1- please send the sketch with detail such as dimension,... ,
2- Please recheck and revise the value of Evaporator accordance with DPIC98-12-001-600-ME-DS-4150-6101 chiller sector.

General Notes:
1- Please submit the Aspen soft. native files V11 version.
2-Please send the calculation of pressure vessel and supporting with PV-Elite native file.

PURCHASER'S COMMENT/APPROVAL STATUS		Purchaser: NARGAN
1	AP: Approved (Released for Manufacturing)	Requisition No.: DPIC98-12-001-000-ME-MR-4150-0001-D1
2	AN: Approved With Minor Comments (Fabrication may Proceed)	
X	NF: Approved With Comments (Fabrication not Proceed)	Item No. (Tag No.): PK-6101
4	RJ: Rejected	
5	NR: Not be Returned	Vendor Doc. No.: DPIC9812-000-VD-1002-ME-DS-0044-D0
Date: 20.11.2021	Signature: A.AB	

REV	DATE ISSUE	PREPARED	CHECKED	APPROVED
D0	30.Oct.21	A.VOSOUGH	DR.A.NEJATI	DR.A.NEJATI

KASRAVAND Engineering & Construction

Page	Rev-D0	Rev-D1	Rev-D2	Rev-D3	Rev-D4
1	x				
2	x				
3	x				
4	x				
5	x				
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fireproofing requirement will be specified on arrangement drawing.

PPI

NARGAN

DASHT PETROCHEMICAL INDUSTRY COMPANY

DASHT HIGH DENSITY POLYETHYLENE PROJECT

شرکت صنایع پتروشیمی خلیج فارس
Persian Gulf Petrochemical Industries Co

Full support at U-bend to be considered.

Note:
1- Please specify the thickness of shell.

Co | **OCUMENT TITLE: Evaporator Data Sheet** | **POI: IFA** | **Rev.: D0**

OCUMENT NUMBER: DPIC9812-000-VD-1002-M | **01-60** | **Sheet 3 of 5**

based on data sheet Hexane fllowrate is 74800x1.1 kg/hr. Please clarify.

Mass flow of HEX in& out shall be , please is item

Discrepancy with PFD.

Fluid is flammable and Non-lethal.

Fluid is flammable and Non-lethal.

1	SERVICE	HEXANE CHILLER						
2	DIAM. X LENGTH	1150,1676 X 4200 mm	MOUNTIN	HORIZONTAL			BKU	
3	NO. OF UNIT	1	SURFACE PER UNIT			EL	1	
4	SHELLS PER UNIT	1	-	434.4			1	
5	TEMA CLASS	R	SIGN	10% FLOW		CODE	TEMA. 9TH ED.	
6			**PERFORMANCE**					
7				SHELL S			TUBE SIDE	
8	FLUID CIRCULATED			PROPYLI			HEXANE	
9	FLUID QUANTITY, TOTAL	kg/h		19269 x 1.1			828500x 1.1	
10			IN	OUT			IN	OUT
11	VAPOUR			21188			-	-
12	LIQUID			8			911350	911350
13	NON CONDENSABLES	kg/h	-	-			-	-
14	TEMPERATURE	°C	-23.98	-24.89			-16	-19.99
15	DENSITY at T and P (Vap./Liq.)	kg/m³	5.81 / 580	5.6 / 580.2			/ 703.25	/ 706.68
16	VISCOSITY at T and P (Vap./Liq.)	cP	0.007 / 0.1422	0.0073 / 0.1425			/ 0.4	
17	MOLECULAR WEIGHT,Vap		42.08	42.08			-	
18	SPECIFIC HEAT (Vap./Liq.)	kJ/kg.C	1.402 / 2.207	1.4 / 2.206			/ 1.	
19	THERMAL CONDUCTIVITY (Vap./Liq.)	W/m.K	0.013 / 0.1281	0.0126 / 0.1282			/ 0.	
20	LATENT HEAT	kj/kg	410	411				
21	INLET PRESSURE (abs)	bar	2.660	2.57			6.914	
22	VELOCITY (Mean/Max)	m/s	1.29 / 2.01				2.55 / 2.55	
23	PRESSURE DROP (Allowable/Calculated)	bar	0.5	0.08722			0.26	0.34954
24	FOULING RESISTANCE (Min)	·K/W	0.00017				9E-05	0.00011 Ao based
25	TYPE OF CLEANING MAINTENANCE		☐ NONE ☑ MECH. ☐ CHEM.				☐ NONE ☑ MECH. ☐ CHEM.	
26	HEAT EXCHANGED	kW	MTD (CORRECTED)				6.23	°C
27	TRANSFER RATE: SERVICE:		or data	759.3		CLEAN:	964.7	W/m²·K
28			ONSTRUCTION					
29	DESIGN PRESSURE	barg	22					
30	VACUUM PRESSURE	barg	-1.01				-1.01	
31	TEST PRESSURE	barg	28.6				28.6	
32	DESIGN TEMPERATURE	°C	120				120	
33	MIN. DESIGN METAL TEMPERATURE	°C	-45				-45	
34	NUMBER PASSES PER SHELL		1				2	
35	CORROSION ALLOWANCE		3				3	
36	PARTICULAR SERVICE		-				-	
37	PROVIDE X-RAY		FULL				FULL	
38	PROVIDE STRESS RELIEVING		☐ CHANNEL		☐ BUNDLE		☐ SHELL	

based on HTRI checking file, duty is unbalance and it seems propylene flowrate shall be slightly decreased.

Refrigerant shall be fully vaporized in kettle.

Average of density is 660 kg/m3

Calculated pressure drop shall be less than allowable one. Based on data sheet allowable pressure drop is 50kpa.

Design temperature of both sides shall be saturate temperature corresponding to design pressure which is equal to 125C+10C. Please recheck.

Not possible due to TEMA type.

Please check which one shall be done

PPI / NARGAN	**DEHDASHT PETROCHEMICAL INDUSTRY COMPANY** **DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT**	شرکت صنایع پتروشیمی خلیج فارس / Persian Gulf Petrochemical Industries Co / PGPIC / شرکت صنایع پتروشیمی دهدشت (سهامی عام)
Contract No.: DPIC/98-12	**DOCUMENT TITLE: Evaporator Data Sheet**	**POI: IFA** / **Rev.: D0**
	DOCUMENT NUMBER: DPIC9812-000-VD-1002-ME-DS-0044	**Sheet 4 of 5**

CONSTRUCTION OF ONE SHELL

TUBE TYPE :	☑ PLAIN	☐ FINNED		SHELL OD	1186,1712	mm	BAFFLE TYPE	FULL SUPORT	
TUBE OD:	19.05	mm		SHELL ID	1150,1676	mm	ORIENTATION		
TUBE THK (avg):	2.11	mm		IMPINGEMENT PROTECTION	NO		BAFFLE NO.	3	#
TUBE LENGTH:	4200	mm		OUTER TUBE LIMIT	1137	mm	BAFFLE THK.	12	mm
TUBE NO:	816U	#		TUBESHEET THK	103	mm	BAFFLE CUT		%
PITCH:	24	mm		TUBE TO TUBESHEET JOINT			C/C SPACING	1400	mm
☐ 30°	☐ 60°			☑ WELD ☑ EXPAND ☑ GROOVES			INLET SPACING		mm
☑ 90°	☐ 45°			TUBE TO TUBESHEET WELD TYPE			CLEARANCE TO SHELL	6.35	mm
				☐ SEAL ☑ FULL STRENGTH			CLEARANCE TO TUBE	0.4	mm
				☐ PARTIAL STRENGTH					

MATERIALS

TUBES	SA-334 GR 6 SEAMLESS	SELL SIDE :			BODY FLANGE :		
SHELL	SA-516 GR70N		NOZZLES:	SA-333 GR6		SHELL:	SA-350 LF2
CHANNEL	SA-516 GR70N		FLANGES:	SA-350 LF2		CHANNEL:	SA-350 LF2
SHELL COVER	SA-516 GR70N	TUBE SIDE :			BOLTS		SA320 L7
TUBE SHEET	SA-350 LF2		NOZZLES:	SA-333 GR6	NUTS		SA 194 Gr. 4
CROSS BAFFLES	SA-516 GR70N		FLANGES:	SA-350 LF2	GASKET		JACKETED METAL
SADDEL/LEG	SA-283GR.C						

please specify

INSULATION AND PAINTING

	SHELL SIDE	CHANNEL SIDE
INSULATION (TYPE / THK)	-	-
PAINTING		
PRIMER	???	???
MID COATING	???	???
TOP COATING	???	???

MECHANICAL DESIGN DATA

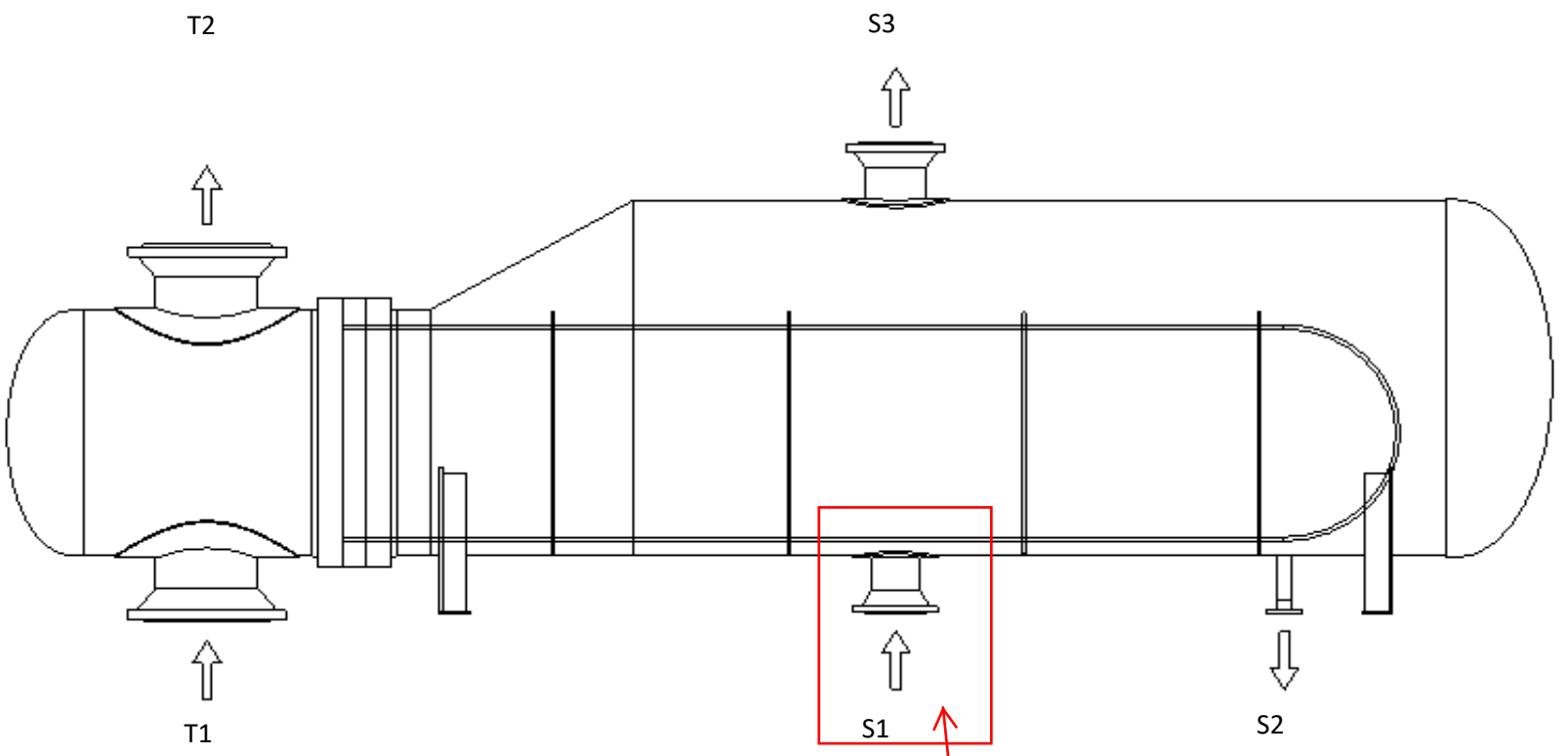
EXPANSION JOINT: ☐ YES ☑ NO ☐ BY MFR. MATERIAL:

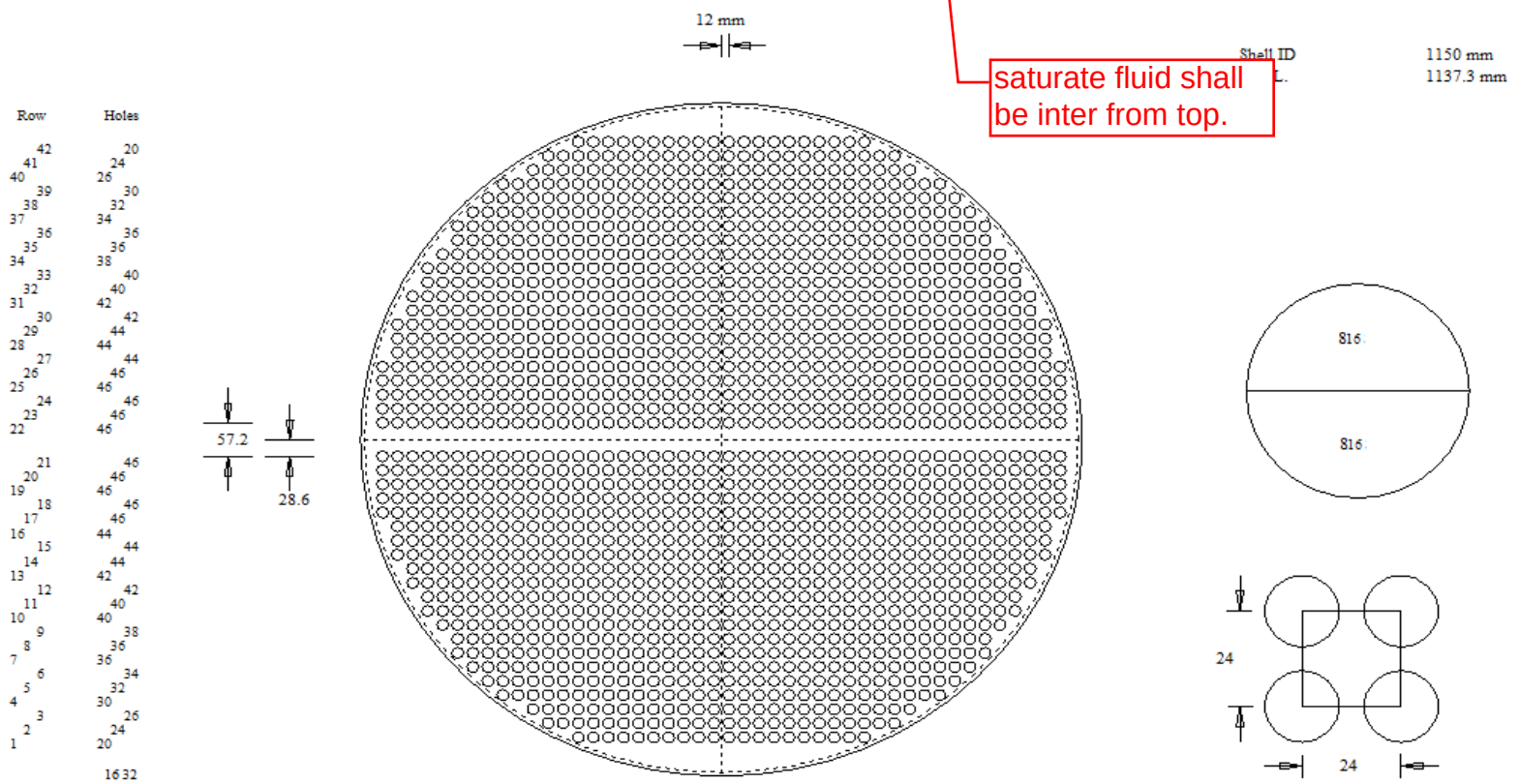
		SHELL 1	SHELL 2	TUBE SHEET	LIFE CYCLES NO
MEAN SHELL METAL TEMPERATURE	°C	-24.45	-	-	-
MEAN TUBE METAL TEMPERATURE	°C	-21.07	-	-	-
MINIMUM TUBE METAL TEMPERATURE	°C	-21.98	-	-	-
MAXIMUM TUBE METAL TEMPERATURE	°C	-19.96	-	-	-

WEIGHT — EMPTY: 15167 kg — HYDROTEST: 27817 kg

DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

Notes:
1- Please redesign and modify sketch accordance with attachment #1,2,4.
2- Please specify type of flange.
3- Please specify supporting specification.
4- Please send its DWG. file.
5- Please send the transparency sketch.





Tag.	No.	Description	Size	Rating	Facing	PROJECTION (mm)
S3	1	PROPYLENE OUT	10"	300#	RF	200
S2	1	DRAIN	2"	300#	RF	200
S1	1	PROPYLENE IN	8"	300#	RF	200
T2	1	HEX.OUT	18"	300#	RF	200
T1	1	HEX. IN	18"	300#	RF	200