PPI / NARGAN	DEHDASHT PETROCHEMICAL INDUSTRY COMPANY DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT	PGPIC
	DOCUMENT TITLE: Oil Cooler Data Sheet	POI: IFA
Contract No.: DPIC/98-12	DOCUMENT NUMBER: DPIC9812-000-VD-1002-ME-DS-0078	Rev. No.: D0

Instrument Nozzles will be checked after finalization of P&ID

Oil Cooler Data Sheet

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-0078-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

PPI / NARGAN	**DEHDASHT PETROCHEMICAL INDUSTRY COMPANY** **DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT**	شرکت صنایع پتروشیمی خلیج فارس PGPIC شرکت صنایع پتروشیمی دهدشت (سهامی عام)
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Page	Rev-D0	Rev-D1	Rev-D2	Rev-D3	Rev-D4
1	x				
2	x				
3	x				
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36					
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DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT

NARGAN

DOCUMENT TITLE

Contract No.: DPIC/98-12

DOCUMENT NUMBER: DPIC9812-000-VD-1002-ME-DS-0078

Please specify OD or ID.

Note:
1- Please specify the thickness of shell.

1	SERVICE	OIL COOLER						ITEM	E-PK6101-1A/B
2	DIAM. X LENGTH	336	X	4000	mm	MOUNTIN	HORIZONTAL	TYPE	BEM
3	NO. OF UNIT	1				SURFACE PER UNIT	30.5 m²	IN PARALLEL	1
4	SHELLS PER UNIT	1				SURFACE PER SHELL	30.5 m²	IN SERIES	
5	TEMA CLASS	R				REQUIRED OVERDESIGN	20% FLOW	CODE	

Refer to utility and site condition, Jacketed water temperature is 37-47C.

6	**PERFORMANCE**					
7		SHELL SIDE				
8	FLUID CIRCULATED	OIL		COOLING WATER		
9	FLUID QUANTITY, TOTAL kg/h	12672 x 1.2		18540x 1.2		
10		IN	OUT	IN	OUT	
11	VAPOUR kg/h	-	-	-	-	
12	LIQUID kg/h	15206	15206	22248	22248	
13	NON CONDENSABLES kg/h	-	-	-	-	
14	TEMPERATURE °C	80.3	50	35	45	
15	DENSITY at T and P (Vap./Liq.) kg/m³	/ 873.29	/ 886.58	/ 994.5	/ 990.61	
16	VISCOSITY at T and P (Vap./Liq.)	/ 1.6365	/ 2.1994	/ 0.719	/ 0.5964	
17	MOLECULAR WEIGHT,Vap					
18	SPECIFIC HEAT (Vap./Liq.)	/ 2.087	/ 1.853	/ 4.171		
19	THERMAL CONDUCTIVITY (Vap./Liq.) W/m.K	/		/ 0.6232		
20	LATENT HEAT kj/kg					
21	INLET PRESSURE (abs) bar	21.900	21.78	6.5	6.47	
22	VELOCITY (Mean/Max) m/s		.28	0.44 /	0.44	
23	PRESSURE DROP (Allowable/Calculated) bar	0.2	0.1203	0.5	0.0291	
24	FOULING RESISTANCE (Min)	0.00017		0.00035	0.0004	Ao based
25	TYPE OF CLEANING MAINTENAN	☐ NONE	☑ MECH. ☐ CHEM.	☐ NONE	☑ MECH. ☐ CHEM.	
26	HEAT EXCHANGED	MTD (CORRECTED)		21		
27	TRANSFER RATE: SERVICE: 340.5	DIRTY: 383.3	CLEAN:	514		

Based on submitted PFD inlet pressure is 20bara.

6.914 bara based on utility and site condition.

CW velocity is too low shall be increased up to 1m/s.

up to 1 bar is accepted.

No need to mechanical cleaning due to low fouling factor. please clarify.

0.0002 based on utility and site condition.

will be finalized after receiving compressor data sheet

28	**CONSTRUCTION**			
29	DESIGN PRESSURE barg	25	20	
30	VACUUM PRESSURE barg	-1.01	-1.01	
31	TEST PRESSURE barg	32.5	26	
32	DESIGN TEMPERATURE °C	120	65	
33	MIN. DESIGN METAL TEMPERATURE °C		-10	
34	NUMBER PASSES PER SHELL		3	
35	CORROSION ALLOWANCE	3	3	
36	PARTICULAR SERVICE	-	-	
37	PROVIDE X-RAY	FULL	FULL	
38	PROVIDE STRESS RELIEVING	☐ CHANNEL ☐ BUNDLE	☐ SHELL	

design temperature of JSW is 190C.

shell inlet shall be located at bottom.

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CONSTRUCTION OF ONE SHELL

TUBE TYPE :	☑ PLAIN	☐ FINNED	SHELL OD	355.	YPE	Single segmental	
TUBE OD:	19.05	mm	SHELL ID	336.	ION	Horizontal	
TUBE THK (avg):	2.11	mm	IMPINGEMENT PROTECTION	NO	D.	35	#
TUBE LENGTH:	4000	mm	OUTER TUBE LIMIT	323.85 mm	BAFFLE THK.	5	mm
TUBE NO:	130	#	TUBESHEET THK	40 mm	BAFFLE CUT	26	%
PITCH:	24	mm	TUBE TO TUBESHEET JOINT		C/C SPACING	100	mm
☑ 30°	☐ 60°		☑ WELD ☑ EXPAND ☐ GROOVES		INLET SPACING	262	mm
☐ 90°	☐ 45°		TUBE TO TUBESHEET WELD TYPE		CLEARANCE TO SHELL	3.18	mm
			☐ SEAL ☑ FULL STRENGTH		CLEARANCE TO TUBE	0.79	mm
			☐ PARTIAL STRENGTH				

Baffle spacing is too tight and baffle number shall be reduced.

MATERIALS

TUBES	SA-179 SEAMLESS	SELL SIDE :		BODY FLANGE :		
SHELL	SA-106 GRB		NOZZLES: SA-106 GRB		SHELL:	SA-266-2
CHANNEL	SA-106 GRB		FLANGES: SA-105		CHANNEL:	SA-266-2
SHELL COVER	SA-516 GR70	TUBE SIDE :		BOLTS		SA 193 Gr. B7
TUBE SHEET	SA-266-2		NOZZLES: SA-106 GRB	NUTS		SA 194 Gr. 2H
CROSS BAFFLES	SA-516 GR70		FLANGES: SA-105	GASKET		JACKETED METAL
SADDEL/LEG	please specify SA-283GR.C					

INSULATION AND PAINTING

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

MECHANICAL DESIGN DATA

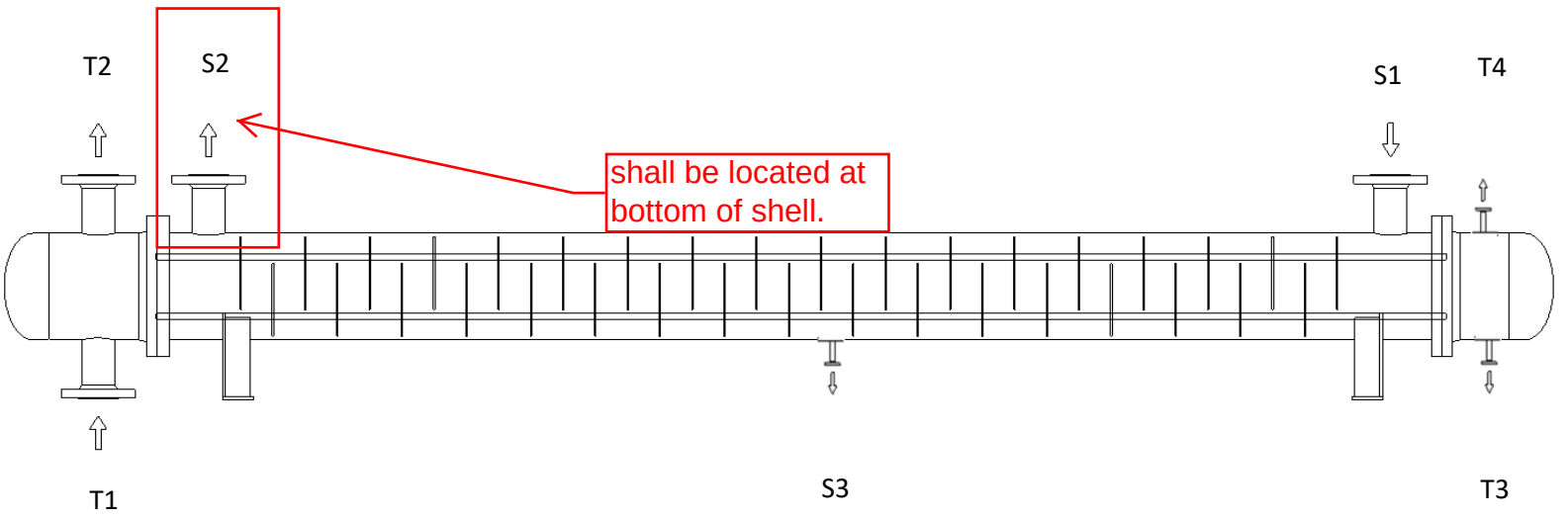
EXPANSION JOINT: ☐ YES ☑ NO ☐ BY MFR. MATERIAL:

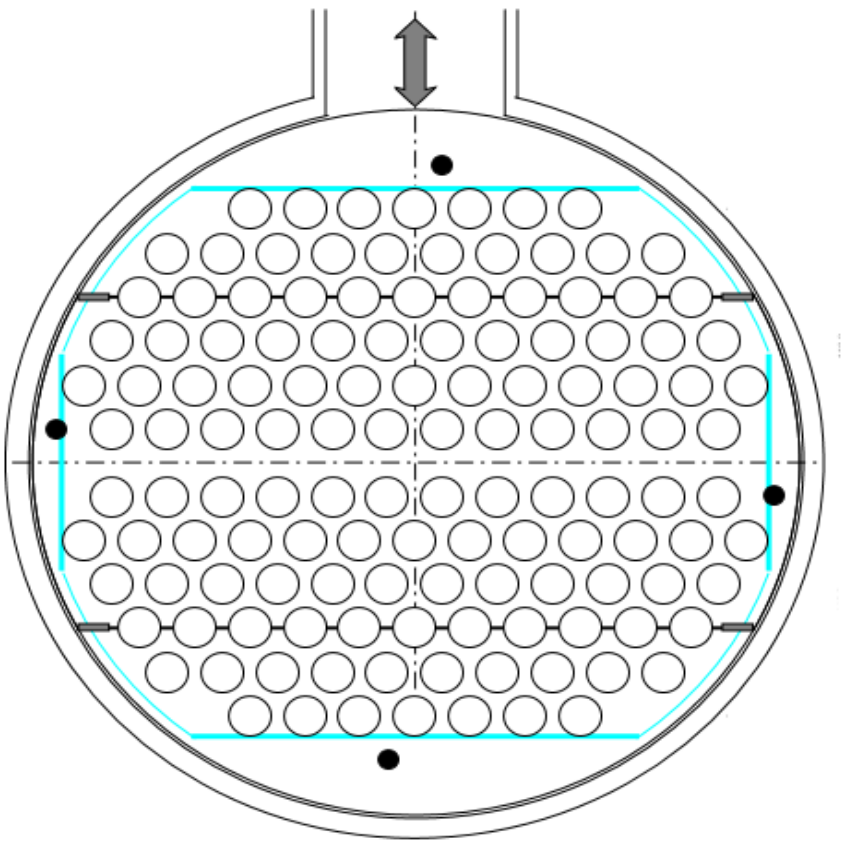
		SHELL 1	SHELL 2	TUBE SHEET	LIFE CYCLES NO
MEAN SHELL METAL TEMPERATURE	°C	61.66	-	-	-
MEAN TUBE METAL TEMPERATURE	°C	48.25	-	-	-
MINIMUM TUBE METAL TEMPERATURE	°C	40.06	-	-	-
MAXIMUM TUBE METAL TEMPERATURE	°C	54.74	-	-	-

WEIGHT — EMPTY: 980 kg — HYDROTEST: 1326 kg

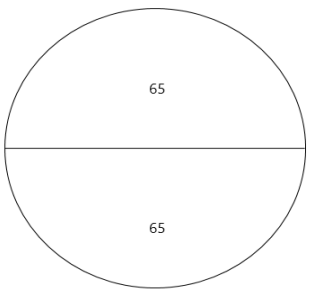
DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

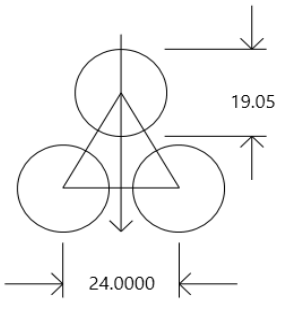
Notes:
1- Please redesign and modify sketch accordance with attachment #1,2,4.
2- Please specify type of flange.
3- Please specify supporting specification.
4- Please send its DWG. file.
5- Please send the transparency sketch.





Shell ID	336.6 mm
O.T.L.	323.9 mm
Baffle cut to C/L	78.2 mm





Tag.	No.	Description	Size	Rating	Facing	PROJECTION (mm)
S3	1	DRAIN	2"	300#	RF	200
S2	1	OIL OUTLET	3"	300#	RF	200
S1	1	OIL INLET	3"	300#	RF	200
T4	1	VENT	3/4"	300#	RF	200
T3	1	DRAIN	1"	300#	RF	200
T2	1	COOLING WATER OUTLET	3"	300#	RF	200
T1	1	COOLING WATER INLET	3"	300#	RF	200