PPI / NARGAN	DEHDASHT PETROCHEMICAL INDUSTRY COMPANY DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT	PGPIC
	DOCUMENT TITLE: Evaporator Data Sheet	POI: IFA
Contract No.: DPIC/98-12	DOCUMENT NUMBER: DPIC9812-000-VD-1002-ME-DS-0044	Rev. No.: D1

DOCUMENT TITLE:

Evaporator Data Sheet (E-6101)

PURCHASER'S COMMENT/APPROVAL STATUS		Purchaser: NARGAN
1	AP: Approved (Released for Manufacturing)	Requisition No.: DPIC98-12-001-000-ME-MR-4150-0001-D1
☒	AN: Approved With Minor Comments (Fabrication may Proceed)	
3	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-D1
Date: 15.01.2022	Signature: A.AB	

REV	DATE ISSUE	PREPARED	CHECKED	APPROVED
D1	26.Dec.21	A.VOSOUGH	DR.A.NEJATI	DR.A.NEJATI
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**	PGPIC
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Page	Rev-D0	Rev-D1	Rev-D2	Rev-D3	Rev-D4
1	x	x			
2	x	x			
3	x	x			
4	x	x			
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This document will be checked after correction of flowrate.

DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT

PPI — NARGAN — PGPIC

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1	SERVICE	HEXANE CHILLER			ITEM	E-6101	
2	DIAM. X LENGTH	1200-1656 X 4200 mm	MOUNTIN	HORIZONT		BKU	
3	NO. OF UNIT	1	SURFACE PER UNIT	47		1	
4	SHELLS PER UNIT	1	SURFACE PER SHELL	478.25 m²	IN SERIES	1	
5	TEMA CLASS	R	REQUIRED OVERDESIGN		CODE	D.	
6	**PERFORMANCE**						
7			SHELL SIDE		TUBE SIDE		
8	FLUID CIRCULATED		PROPYLENE		HEXANE		
9	FLUID QUANTITY, TOTAL	kg/h	19500		748000		
10			IN	OUT	IN	OUT	
11	VAPOUR	kg/h	4680	19500	-	-	
12	LIQUID	kg/h	14820	0.0	748000	748000	
13	NON CONDENSABLES	kg/h	-	-	-	-	
14	TEMPERATURE	°C	-23.98	-23.98	-16	-19.99	
15	DENSITY at T and P (Vap./Liq.)	kg/m³	5.78 / 578.8	5.78	703.25	706.94	
16	VISCOSITY at T and P (Vap./Liq.)	cP	0.0073 / 0.1408	0.0073	0.4872	0.5147	
17	MOLECULAR WEIGHT,Vap		42.08	42.08	-	-	
18	SPECIFIC HEAT (Vap./Liq.)	kJ/kg.C	1.405 / 2.214	1.4050	1.906	1.8875	
19	THERMAL CONDUCTIVITY (Vap./Liq.)	W/m.K	0.0127 / 0.1275	0.0127	0		
20							
21	INLET PRESSURE (abs)	bar	2.620		0.289	6.914	
22	VELOCITY (Mean/Max)	m/s	/ 0.37		/	2.36	
23	PRESSURE DROP (Allowable/Calculated)	bar	0.1	0.005441	0.50	0.438	
24	FOULING RESISTANCE (Min)	m²·K/W	0.00017		0.00009		
25	TYPE OF CLEANING MAINTENANCE		☑ NONE ☐ MECH. ☐ CHEM.		☑ NONE ☐ MECH. ☐ CHEM.		
26	HEAT EXCHANGED	1688 kW	MTD (CORRECTED)		5.6	°C	
27	TRANSFER RATE: SERVICE:	647.45	CALCULATED:	707.61	CLEAN:	895.96	W/m²·K
28	**CONSTRUCTION**						
29	DESIGN PRESSURE	barg	23		23		
30	VACUUM PRESSURE	barg	-1.01				
31	TEST PRESSURE	barg	29.9		29.9		
32	DESIGN TEMPERATURE	°C	125		125		
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		

This flowrate causes less duty than design duty. Flowrate shall be corrected.

will be finalized after thermal calculation approval

based on thermal datasheet "1.96"

please revise based thermal datasheet

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there is discrepancy with thermal datasheet

CONSTRUCTION OF ONE SHELL

TUBE TYPE :	☑ PLAIN	☐ FINNED	SHELL OD	1240 ~~1240,1692~~	mm	BAFFLE TYPE	FULL SUPORT	
TUBE OD:	19.05	mm	SHELL ID	1200,1656	mm	ORIENTATION		
TUBE THK (avg):	2.77	mm	IMPINGEMENT	NO		BAFFLE		#
TUBE LENGTH:	4200	mm	OUTER TUBE LIMIT	1182.8	mm	BAFFLE THK.	15	mm
TUBE NO:	870U	#	TUBESHEET THK	140	mm	BAFFLE CUT		%
PITCH:	24	mm	TUBE TO TUBESHEET JOINT			C/C SPACING	800 ~~820.2~~	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	~~0.7938~~ 0.8	mm
			☐ PARTIAL STRENGTH					

to be specified in thermal data sheet

there is contradiction with drawing

will be finalized later

please clarify based on calculation full strength weld has been considered. usually full strength with light expand is considered

MATERIALS

based on thermal datasheet C.S. has been considered, please recheck

TUBES	SA-334 GR 6 SEAMLESS	SELL SIDE :		GE :		
SHELL	SA-516 GR70N		NOZZLES: SA-333 G		HELL:	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					

INSULATION AND PAINTING

	SHELL SIDE	CHANNEL SIDE
INSULATION (TYPE / THK)	COLD/ 100 mm	-
PAINTING		
PRIMER	ZINCETHYL SILICATE (70μm)	
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	-23.98	-	-	-
MEAN TUBE METAL TEMPERATURE °C	-21.29	-	-	-
MINIMUM TUBE METAL TEMPERATURE °C	-21.72	-	-	-
MAXIMUM TUBE METAL TEMPERATURE °C	-20.84	-	-	-

WEIGHT	EMPTY:	18953	kg	HYDROTEST:	32350 kg

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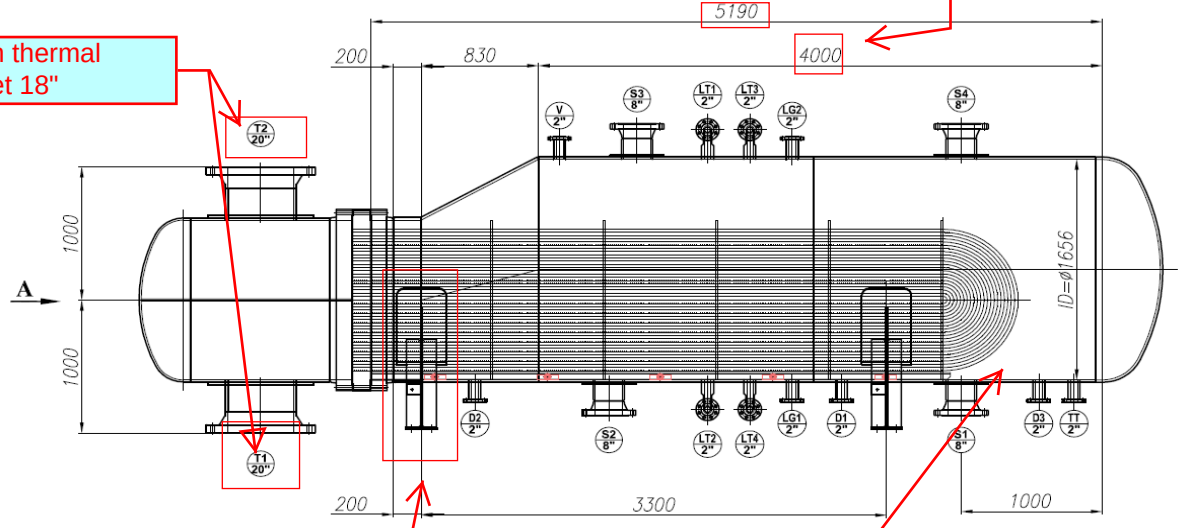
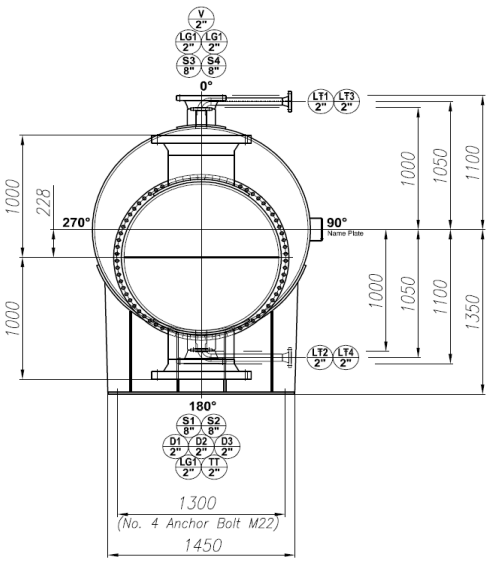
based on thermal datasheet 18"

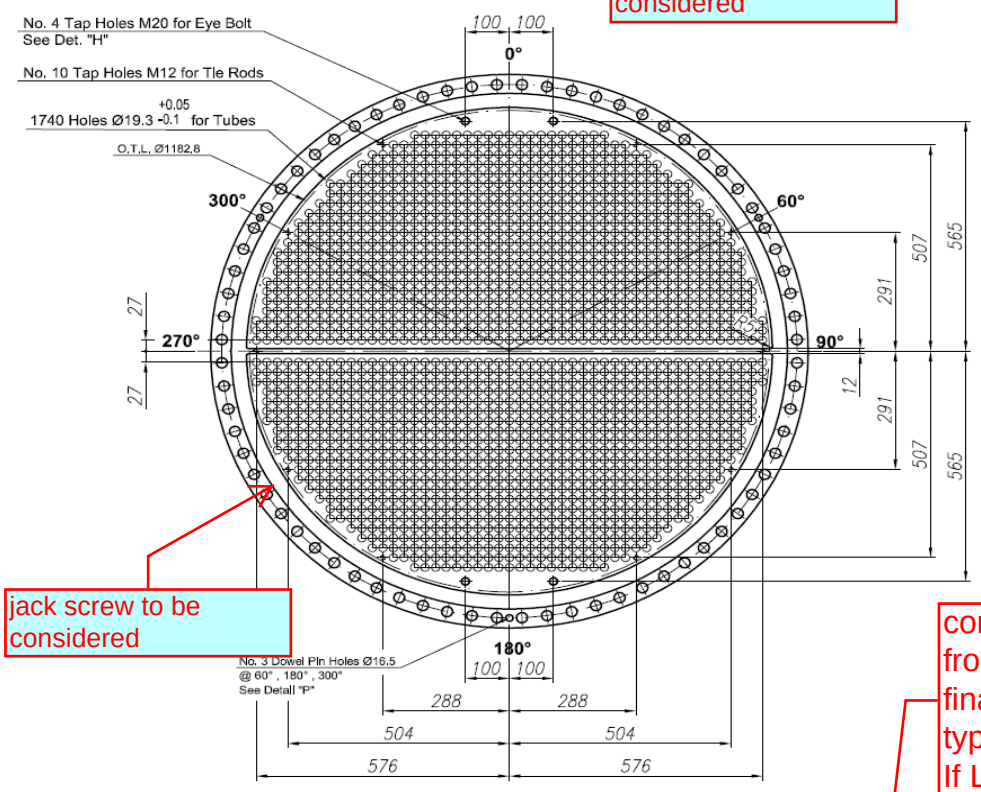
based on drawing 4050

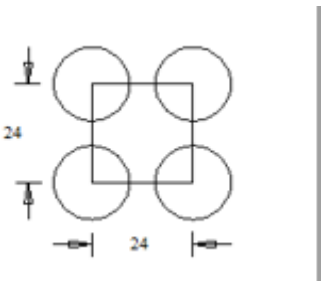




location of saddle to be revised

please check with thermal data sheet, weir plate to be considered





jack screw to be considered

connection could be frozen after finalization of LT type
If LT IS Dp type then 3" shall be considered

to be revised

Tag.	No.	Description	Size	Rating	Facing	PROJECTION (mm)
D1~3	3	DRAIN	2"	300#	RF	200
LG1,2	2	LEVEL GAUGE	2"	300#	RF	200
LT1~4	4	LEVEL TRANSMITTER	2"	300#	RF	200
S1,2	2	PROPYLENE IN	8"	300#	RF	200
S3,4	2	PROPYLENE OUT	8"	300#	RF	200
T2	1	HEX.OUT	2	300#	RF	200
T1	1	HEX. IN	20"	300#	RF	200
TT	1	TEMPERATURE TRANSMITTER	2"	300#	RF	200
V	1	VENT	2"	300#	RF	200

as per PID in Temp. Gauge not transmitter will be finalized after PID freeze

there is discrepancy with thermal datasheet

as per PID is 1.5"