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**						

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

will be finalized after thermal calculation approval

BASE ON YOUR PREVIOUSE COMMENT FLOW CHANGED TO 748000 KG/H. CHANGING THE FLOWRATE AGAIN IS NOT ACCEPTABLE BEACUSE ALL OF PACKAGE CAPACITY CHANGED AGAIN. EVAPORATOR SIZE IS OK AND CAN HANDLE YOUR DESIGN FLOW. THIS IS RESPONSIBILITY OF PACKAGE DESIGNER.

			SHELL SIDE		TUBE SIDE	
8			PROPYLENE		HEXANE	
9		kg/h	19500		748000	
10			IN	OUT	IN	OUT
11		kg/h	4680	19500	-	-
12		kg/h	14820	0.0	748000	748000
13		kg/h	-	-	-	-
14		°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			4872	0.5147
17	MOLECULAR WEIGHT,Vap				-	-
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

PLEASE CHECK THE LAST REVITION OF THERMAL CAL.

based on thermal datasheet "1.96"

please revise based thermal datasheet

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	

PPI

NARGAN

OMPANY

DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT

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CORRECTED

there is discrepancy with thermal datasheet

GIVEN IN MECHANICAL DSH

RUCTION OF ONE SHELL

1240

2	TUBE TYPE : ☑ PLAIN ☐ FINNED		SHELL OD	1240,1692	mm	BAFFLE TYPE	FULL SUPORT	
3	TUBE OD:	19.05	mm	SHELL ID	1200,1656	mm	ORIENTATION		
4	TUBE THK (avg):	2.77	mm	IMPINGEM	IO		BAFFLE		#
5	TUBE LENGTH:	4200	mm	OUTER TUBE LIMIT	1182.8	mm	BAFFLE THK.	15	mm
6	TUBE NO:	870U	#	TUBESHEET THK	140	mm	BAFFLE CUT		%
7	PITCH:	24	mm	TUBE TO TUBESHEET JOINT			C/C SPACING	800 / 820.2	mm
8	☐ 30°	☐ 60°		☑ WELD ☑ EXPAND ☐ GROOVES			INLET SPACING		mm
9	☑ 90°	☐ 45°		TUBE TO TUBESHEET WELD TYPE			CLEARANCE TO SHELL	6.35	mm
10				☐ SEAL ☑ FULL STRENGTH			CLEARANCE TO TUBE	0.7938 / 0.8	mm
11				☐ PARTIAL STRENGTH					

to be specified in thermal data sheet

there is contradiction with drawing

CORRECTED

will be finalized later

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

EXPAND MENTIONED HEAR

IT IS OK.

13	TUBES	SA-334 GR 6 SEAMLESS	SELL SIDE :		GE :	
14	SHELL	SA-516 GR70N	NOZZLES:	SA-333 G	HELL:	SA-350 LF2
15	CHANNEL	SA-516 GR70N	FLANGES:	SA-350 LF2	CHANNEL:	SA-350 LF2
16	SHELL COVER	SA-516 GR70N	TUBE SIDE :		BOLTS	SA320 L7
17	TUBE SHEET	SA-350 LF2	NOZZLES:	SA-333 GR6	NUTS	SA 194 Gr. 4
18	CROSS BAFFLES	SA-516 GR70N	FLANGES:	SA-350 LF2	GASKET	JACKETED METAL
19	SADDEL/LEG	SA-283GR.C				

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

MATERIAL IS OK.

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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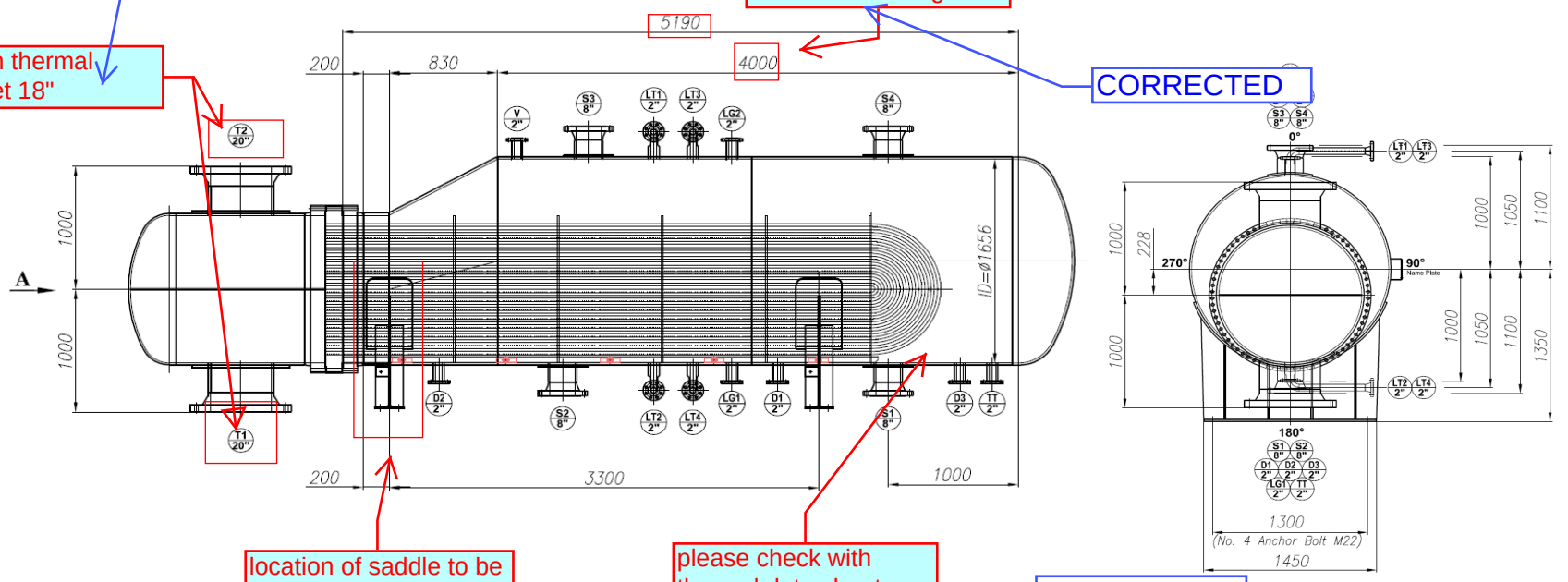
PLEASE CHECK THE LAST REVITION OF THERMAL CAL.

based on thermal datasheet 18"

based on drawing 4050

CORRECTED

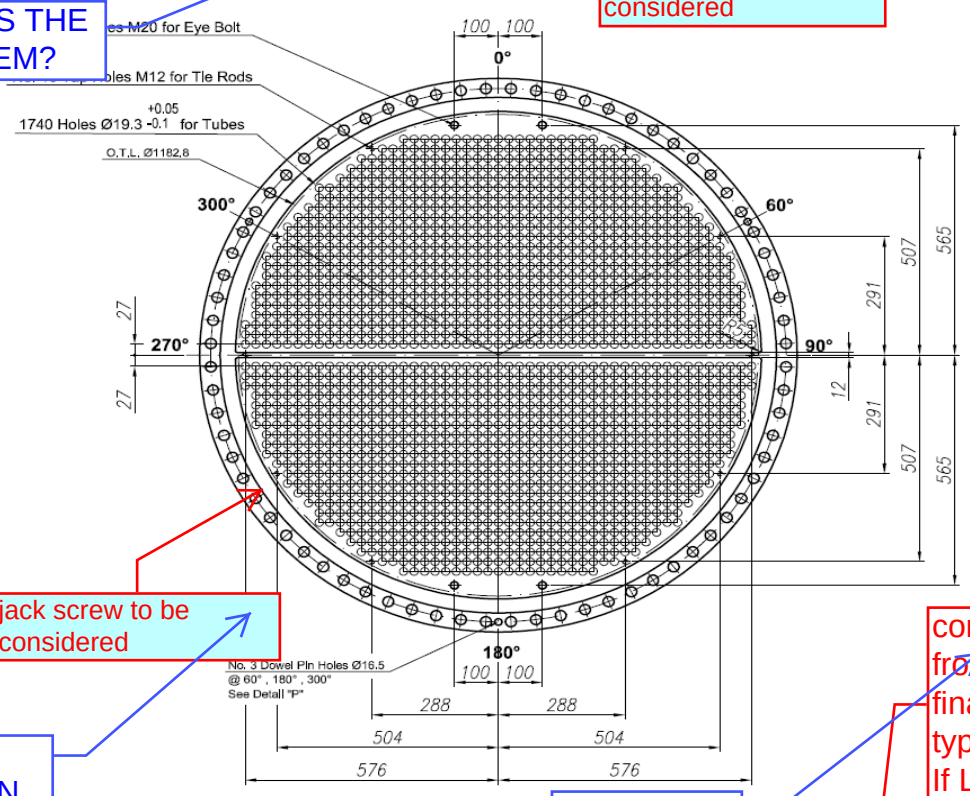


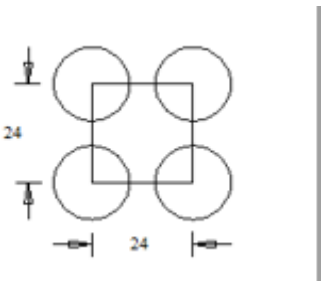
location of saddle to be revised

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

NO NEEDED

WHAT IS THE PROBLEM?





jack screw to be considered

PROJECTION IS OK.

WILL BE ADDED IN DWG IF NEEDED

SIZE IS OK.

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

to be revised

CORRECTED

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"

CORRECTED

PLEASE CHECK THE LAST REVITION OF THERMAL CAL.

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		RF	200
T1	1	HEX. IN	20"	300#		200
TT		MITTER	2"	300#	RF	200
V	1	VENT	2"	300#	RF	200