PPI / NARGAN	DEHDASHT PETROCHEMICAL INDUSTRY COMPANY DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT	PGPIC
	DOCUMENT TITLE: Economizer Data Sheet	POI: IFA
Contract No.: DPIC/98-12	DOCUMENT NUMBER: DPIC9812-000-VD-1002-ME-DS-0076	Rev. No.: D2

Regarding last meeting with vendor, please revise calculation as per thermal calculation comment for considering 1.1x748000 for flowrate and duty of 1750 kw and please size all equipment inside package for mentioned design duty of chiller

Previous comment as per agreement shall be implemented

DOCUMENT TITLE:

Economizer Data Sheet (E-PK6101-3)

Tube and shell detail data which will be affected based on revised thermal calculation will be checked in next revision and discrepancies with data sheet and DWG will be checked in next revision

PURCHASER'S COMMENT/APPROVAL STATUS		Purchaser: NARGAN
1	AP: Approved (Released for Manufacturing)	Requisition No.: DPIC98-12-001-000-ME-MR-4150-0001-D2
X	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-0076-D1
Dat 06.03.2022	ature: A.AB	

REV	DATE ISSUE	PREPARED	CHECKED	APPROVED
D2	22.Jan.22	A.VOSOUGH	DR.A.NEJATI	DR.A.NEJATI
D1	25.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**	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	x	x		
2	x	x	x		
3	x	x	x		
4	x	x	x		
5	x	x			
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DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

PREVIOUS COMMENT SHALL BE IMPLEMENTED.

SITY POLYETHYLENE PROJECT

DOCUMENT TITLE:

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Rev. No.: D2

1	SERVICE	ECONOMIZER			ITEM	E-PK6101-3
2	DIAM. X LENGTH	581 X	HORIZONTAL		TYPE	BEM
3	NO. OF UNIT		113.94	m²	IN PARALLEL	1
4	SHELLS PER UNIT		113.94	m²	IN SERIES	1
5	TEMA CLASS				CODE	TEMA. 9TH ED.
6			ORMANCE			

As per Doc. No. DPC-PR-CRT-0001 equipment design criteria (MR attachment) 10% safety overdesign shall be considered on design case for heat exchanger sizing.
Please consider 10% over design on flow same as previous revision.

			SHELL SIDE		TUBE SIDE	
7						
8	FLUID CIRCULATED		PROPYLENE		PROPYLENE	
9	FLUID QUANTITY, TOTAL	kg/h	19500.0		7002.55	
10			IN	OUT	IN	OUT
11	VAPOUR	kg/h	-	-	2030.74	7002.55
12	LIQUID	kg/h	19500	19500	4971.81	-
13	NON CONDENSABLES			-	-	-
14	TEMPERATURE			16	12.37	15
15	DENSITY at T and P (Vap./Liq.)	kg/m³	461.73	520.93	17.36 / 526.76	17.11
16	VISCOSITY at T and P (Vap./Liq.)	cP	0.0599	0.894	0.0087 / 0.0933	0.0087
17	MOLECULAR WEIGHT,Vap					
18	SPECIFIC HEAT (Vap./Liq.)	kJ/kg.K	3.3267	2.5839	1.65 / 2.578	1.655
19	THERMAL CONDUCTIVITY (Vap./Liq.)	W/m.K	0.0898	0.1061	0.0162 / 0.1081	0.0165
20						
21	INLET PRESSURE (abs)	bar	19.900		8.3	
22	VELOCITY (Mean/Max)	m/s	/ 0.21		/ 3.39	
23	PRESSURE DROP (Allow	bar	0.2	0.019	0.1	0.048
24	FOULING RESISTANCE (	m²·K/W	0.00017		0.00017	
25	TYPE OF CLEANING MAINTENANCE		☑ NONE ☐ MECH ☐ CHEM.		☑ NONE ☐ MECH ☐ CHEM.	
26	HEAT EXCHANGED	506 kW	MTD (CORRECTED)		14.1	°C
27	TRANSFER RATE: SERVICE:	314.5 CALCULATED:	347.86	CLEAN:	402.08	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	135		135	
33	MIN. DESIGN METAL TEMPERATURE	°C	-45		-45	
34	NUMBER PASSES PER SHELL		1		3	
35	CORROSION ALLOWANCE		3		3	
36	PARTICULAR SERVICE		-		-	
37	PROVIDE X-RAY		FULL		FULL	
38	PROVIDE STRESS RELIEVING		☐ CHANNEL	☐ BUNDLE	☐ SHELL	

Recheck please it seems 0.07cP is correct.

Operating pressure of propylene liquid receiver is 19.6 bara.
Please recheck.

Discrepancy with equipment list

FV to be considered (propylene filter design pressure is 23/FV)

DEHDASHT PETROCHEMICAL INDUSTRY COMPANY

DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT

NARGAN

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CONSTRUCTION OF ONE SHELL

TUBE TYPE :	☑ PLAIN	☐ FINNED	SHELL OD	601	mm	BAFFLE TYPE	Single segmental	
TUBE OD:	25.4	mm	SHELL ID	581	mm	ORIENTATION	Horizontal	
TUBE THK (avg):	2.77	mm	IMPINGEMENT PROTECTION	NO		BAFFLE NO.	18	#
TUBE LENGTH:	6000	mm	OUTER TUBE LIMIT	566.949	mm	BAFFLE THK.	8	mm
TUBE NO:	241	#	TUBESHEET THK	62	mm	BAFFLE CUT	28.5	%
PITCH:	32	mm	TUBE TO TUBESHEET JOINT			C/C SPACING	300	mm
☑ 30°	☐ 60°		☑ WELD ☑ EXPAND ☑ GROOVES			INLET SPACING	350	mm
☐ 90°	☐ 45°		TUBE TO TUBESHEET WELD TYPE			CLEARANCE TO SHELL	4.76	mm
			☐ SEAL ☑ FULL STRENGTH ☐ PARTIAL STRENGTH			CLEARANCE TO TUBE	0.79	mm

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				

Discrepancy with DWG

INSULATION AND PAINTING

	SHELL SIDE	CHANNEL SIDE
INSULATION (TYPE / THK)	COLD/100 mm	-
PAINTING		
PRIMER	ZINCETHYL SILICATE (1X70µm)	
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	28.02	-	-	-
MEAN TUBE METAL TEMPERATURE °C	21.71	-	-	-
MINIMUM TUBE METAL TEMPERATURE °C	20.44	-	-	-
MAXIMUM TUBE METAL TEMPERATURE °C	22.98	-	-	-

WEIGHT EMPTY: 4058 kg HYDROTEST: 5602 kg

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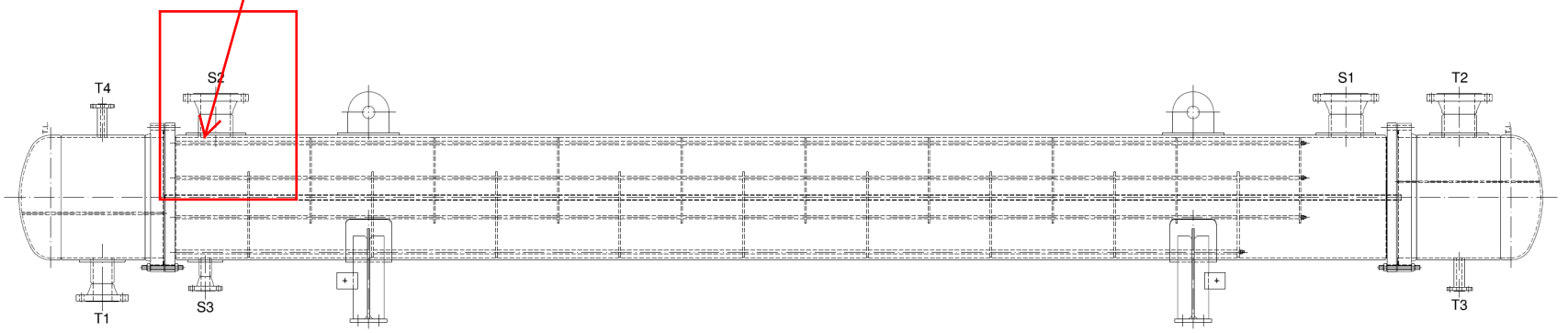
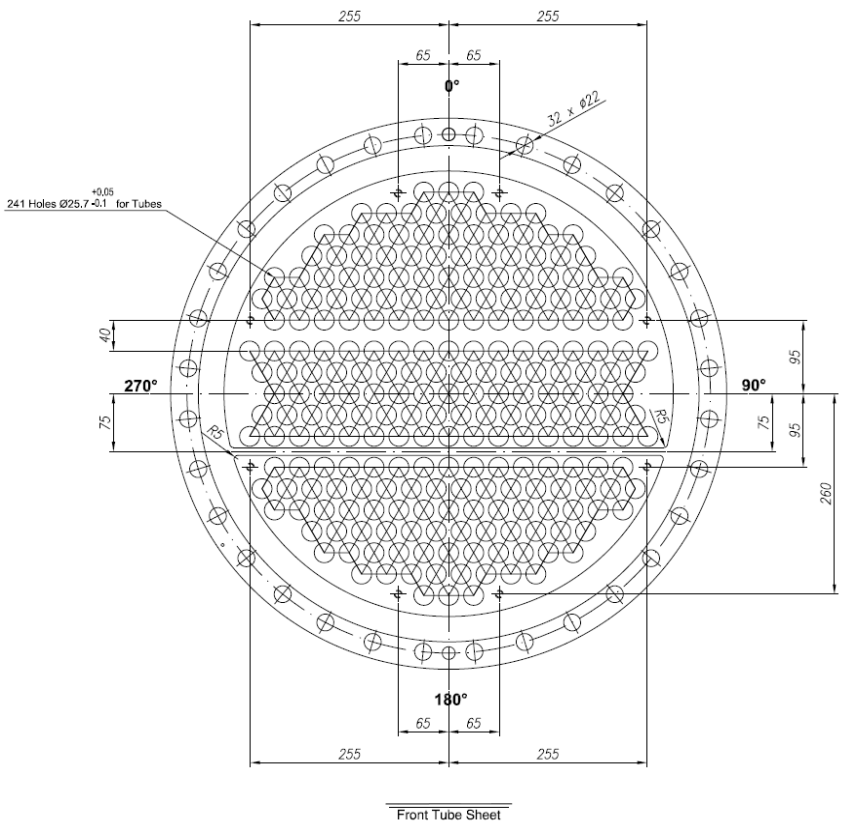
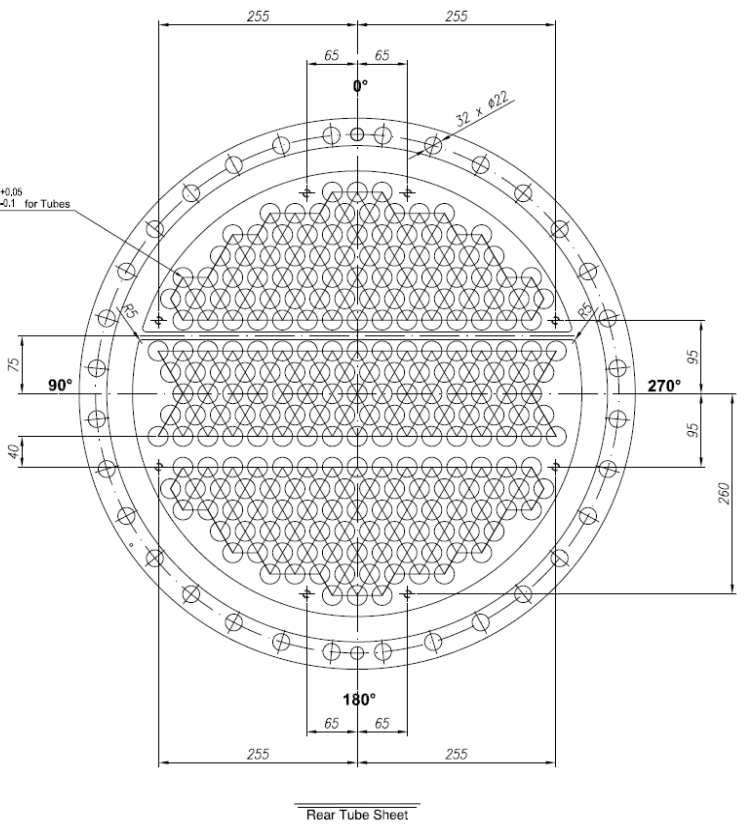
Shall be at bottom.

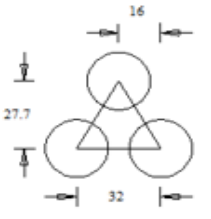




Front Tube Sheet



Rear Tube Sheet



Tag.	No.	Description	Size	Rating	Facing	PROJECTION (mm)
T3	1	DRAIN	1"	300#	RF	200
T4	1	VENT	3/4"	300#	RF	200
S3	1	DRAIN	2"	300#	RF	200
S2	1	PROPYLENE OUTLET	6"	300#	RF	200
S1	1	PROPYLENE INLET	6"	300#	RF	200
T2	1	PROPYLENE OUTLET	6"	300#	RF	200
T1	1	PROPYLENE INLET	4"	300#	RF	200