



**DEHDASHT PETROCHEMICAL INDUSTRY COMPANY**  
**DEHDASHT HIGH DENSITY POLYETHYLENE PROJECT**



**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**

## Oil Cooler Data Sheet

**PURCHASER'S COMMENT/APPROVAL STATUS**

Purchaser: NARGAN

1	AP: Approved (Released for Manufacturing)
2	AN: Approved With Minor Comments (Fabrication may Proceed)
3	NF: Approved With Comments (Fabrication not Proceed)
4	RJ: Rejected
5	NR: Not be Returned

Requisition No.: DPIC98-12-001-000-ME-MR-4150-0001-D1

Item No. (Tag No.): PK-6101

Vendor Doc. No.: DPIC9812-000-VD-1002-ME-DS-0078-D0

Date: XX.XX.XX      Signature:

D0	30.Oct.21	A.VOSOUGH	DR.A.NEJATI	DR.A.NEJATI
<b>REV</b>	<b>DATE ISSUE</b>	<b>PREPARED</b>	<b>CHECKED</b>	<b>APPROVED</b>





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1	SERVICE	<b>OIL COOLER</b>				ITEM	<b>E-PK6101-1A/B</b>				
2	DIAM. X LENGTH	<b>336</b>	X	<b>4000</b>	mm	MOUNTIN	<b>HORIZONTAL</b>				
3	NO. OF UNIT	<b>1</b>				SURFACE PER UNIT	<b>30.5</b>	m <sup>2</sup>	IN PARALLEL	<b>1</b>	
4	SHELLS PER UNIT	<b>1</b>				SURFACE PER SHELL	<b>30.5</b>	m <sup>2</sup>	IN SERIES	<b>1</b>	
5	TEMA CLASS	<b>R</b>				REQUIRED OVERDESIGN	<b>20% FLOW</b>		CODE	<b>TEMA. 9TH ED.</b>	
6	<b>PERFORMANCE</b>										
7							SHELL SIDE		TUBE SIDE		
8	FLUID CIRCULATED						<b>OIL</b>		<b>COOLING WATER</b>		
9	FLUID QUANTITY, TOTAL	kg/h					<b>12672 x 1.2</b>		<b>18540x 1.2</b>		
10							IN	OUT	IN	OUT	
11	VAPOUR	kg/h					-	-	-	-	
12	LIQUID	kg/h					<b>15206</b>	<b>15206</b>	<b>22248</b>	<b>22248</b>	
13	NON CONDENSABLES	kg/h					-	-	-	-	
14	TEMPERATURE	°C					<b>80.3</b>	<b>50</b>	<b>35</b>	<b>45</b>	
15	DENSITY at T and P (Vap./Liq.)	kg/m <sup>3</sup>					/ <b>873.29</b>	/ <b>886.58</b>	/ <b>994.5</b>	/ <b>990.61</b>	
16	VISCOSITY at T and P (Vap./Liq.)	cP					/ <b>1.6365</b>	/ <b>2.1994</b>	/ <b>0.719</b>	/ <b>0.5964</b>	
17	MOLECULAR WEIGHT, Vap										
18	SPECIFIC HEAT (Vap./Liq.)	kJ/kg.K					/ <b>2.087</b>	/ <b>1.853</b>	/ <b>4.171</b>	/ <b>4.172</b>	
19	THERMAL CONDUCTIVITY (Vap./Liq.)	W/m.K					/ <b>0.15</b>	/ <b>0.15</b>	/ <b>0.6232</b>	/ <b>0.6371</b>	
20	LATENT HEAT	kJ/kg									
21	INLET PRESSURE (abs)	bar					<b>21.900</b>	<b>21.78</b>	<b>6.5</b>	<b>6.47</b>	
22	VELOCITY (Mean/Max)	m/s					<b>0.27</b>	/ <b>0.28</b>	<b>0.44</b>	/ <b>0.44</b>	
23	PRESSURE DROP (Allowable/Calculated)	bar					<b>0.2</b>	<b>0.1203</b>	<b>0.5</b>	<b>0.0291</b>	
24	FOULING RESISTANCE (Min)	m <sup>2</sup> ·K/W					<b>0.00017</b>		<b>0.00035</b>	<b>0.0004</b>	<b>AO based</b>
25	TYPE OF CLEANING MAINTENANCE						<input type="checkbox"/> NONE <input checked="" type="checkbox"/> MECH. <input type="checkbox"/> CHEM.		<input type="checkbox"/> NONE <input checked="" type="checkbox"/> MECH. <input type="checkbox"/> CHEM.		
26	HEAT EXCHANGED	<b>257.6</b>	kW				MTD (CORRECTED)		<b>21.31</b>	°C	
27	TRANSFER RATE:	SERVICE:	<b>340.5</b>	DIRTY:	<b>383.3</b>	CLEAN:	<b>514</b>	W/m <sup>2</sup> ·K			
28	<b>CONSTRUCTION</b>										
29	DESIGN PRESSURE	barg					<b>25</b>	<b>20</b>			
30	VACUUM PRESSURE	barg					<b>-1.01</b>	<b>-1.01</b>			
31	TEST PRESSURE	barg					<b>32.5</b>	<b>26</b>			
32	DESIGN TEMPERATURE	°C					<b>120</b>	<b>65</b>			
33	MIN. DESIGN METAL TEMPERATURE	°C					<b>-10</b>	<b>-10</b>			
34	NUMBER PASSES PER SHELL						<b>1</b>	<b>3</b>			
35	CORROSION ALLOWANCE						<b>3</b>	<b>3</b>			
36	PARTICULAR SERVICE						-	-			
37	PROVIDE X-RAY						<b>FULL</b>		<b>FULL</b>		
38	PROVIDE STRESS RELIEVING						<input type="checkbox"/> CHANNEL	<input type="checkbox"/> BUNDLE	<input type="checkbox"/> SHELL		



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1	<b>CONSTRUCTION OF ONE SHELL</b>					
2	TUBE TYPE : <input checked="" type="checkbox"/> PLAIN <input type="checkbox"/> FINNED	SHELL OD	355.6	mm	BAFFLE TYPE	Single segmental
3	TUBE OD: 19.05 mm	SHELL ID	336.6	mm	ORIENTATION	Horizontal
4	TUBE THK (avg): 2.11 mm	IMPINGEMENT PROTECTION	NO		BAFFLE NO.	35 #
5	TUBE LENGTH: 4000 mm	OUTER TUBE LIMIT	323.85	mm	BAFFLE THK.	5 mm
6	TUBE NO: 130 #	TUBESHEET THK	40	mm	BAFFLE CUT	26 %
7	PITCH: 24 mm	TUBE TO TUBESHEET JOINT			C/C SPACING	100 mm
8	<input checked="" type="checkbox"/> 30° <input type="checkbox"/> 60°	<input checked="" type="checkbox"/> WELD <input checked="" type="checkbox"/> EXPAND <input type="checkbox"/> GROOVES			INLET SPACING	262 mm
9	<input type="checkbox"/> 90° <input type="checkbox"/> 45°	TUBE TO TUBESHEET WELD TYPE			CLEARANCE TO SHELL	3.18 mm
10		<input type="checkbox"/> SEAL <input checked="" type="checkbox"/> FULL STRENGTH			CLEARANCE TO TUBE	0.79 mm
11		<input type="checkbox"/> PARTIAL STRENGTH				
12	<b>MATERIALS</b>					
13	TUBES SA-179 SEAMLESS	SELL SIDE :			BODY FLANGE :	
14	SHELL SA-106 GRB	NOZZLES:	SA-106 GRB		SHELL:	SA-266-2
15	CHANNEL SA-106 GRB	FLANGES:	SA-105		CHANNEL:	SA-266-2
16	SHELL COVER SA-516 GR70	TUBE SIDE :			BOLTS	SA 193 Gr. B7
17	TUBE SHEET SA-266-2	NOZZLES:	SA-106 GRB		NUTS	SA 194 Gr. 2H
18	CROSS BAFFLES SA-516 GR70	FLANGES:	SA-105		GASKET	JACKETED METAL
19	SADDEL/LEG SA-283GR.C					
20	<b>INSULATION AND PAINTING</b>					
21		SHELL SIDE			CHANNEL SIDE	
22	INSULATION (TYPE / THK)	-			-	
23	PAINTING					
24	PRIMER	???			???	
25	MID COATING	???			???	
26	TOP COATING	???			???	
27	<b>MECHANICAL DESIGN DATA</b>					
28	EXPANSION JOINT: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO <input type="checkbox"/> BY MFR.	MATERIAL:				
29		SHELL 1	SHELL 2	TUBE SHEET	LIFE CYCLES NO	
30	MEAN SHELL METAL TEMPERATURE °C	61.66	-	-	-	
31	MEAN TUBE METAL TEMPERATURE °C	48.25	-	-	-	
32	MINIMUM TUBE METAL TEMPERATURE °C	40.06	-	-	-	
33	MAXIMUM TUBE METAL TEMPERATURE °C	54.74	-	-	-	
34	WEIGHT	EMPTY: 980 kg		HYDROTEST: 1326 kg		



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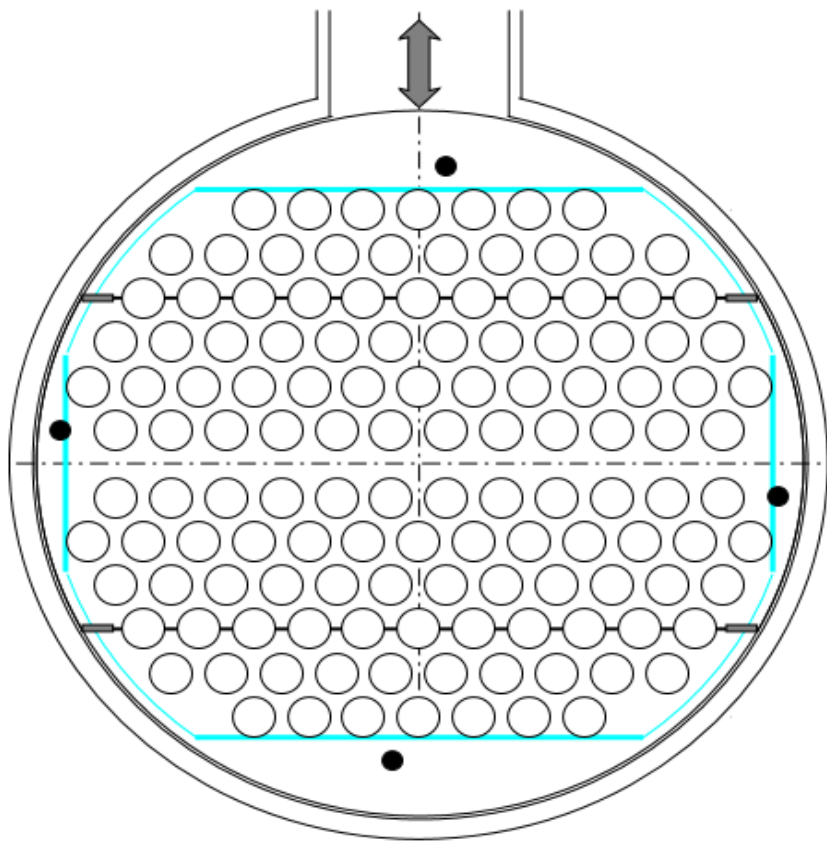
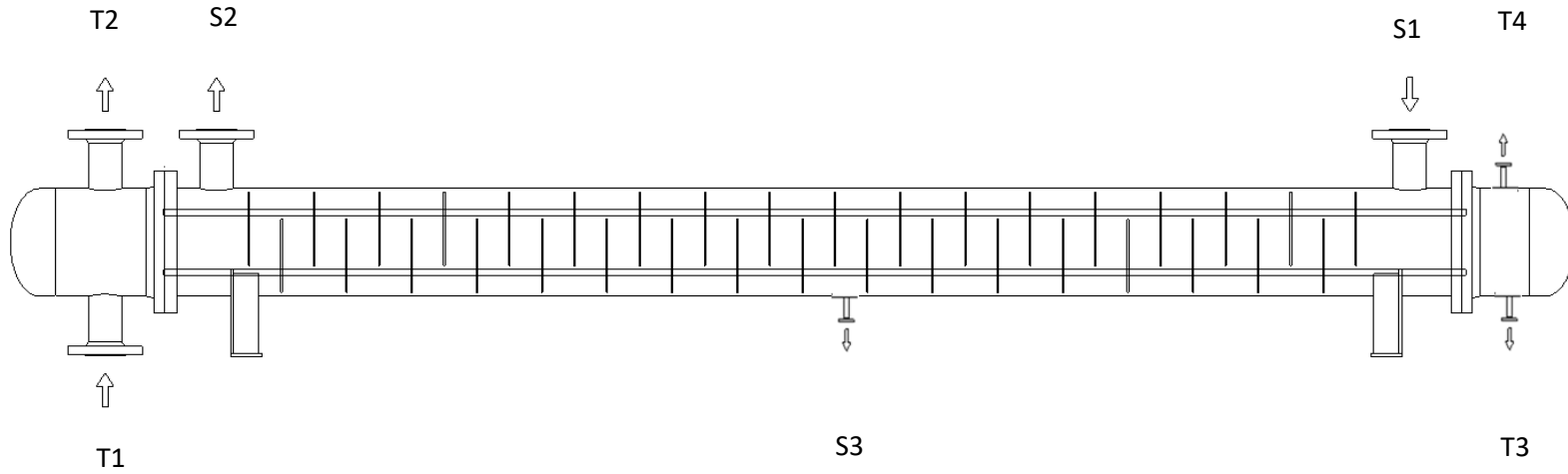
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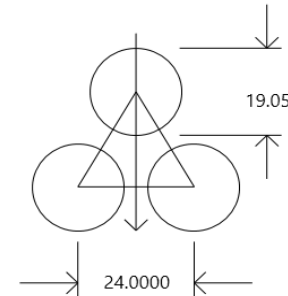
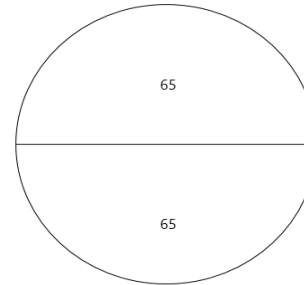
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Shell ID                    336.6 mm  
 O.T.L.                      323.9 mm  
 Baffle cut to C/L        78.2 mm



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
Tag.	No.	Description	Size	Rating	Facing	PROJECTION (mm)