

FEEDWATER HEATER

Customer	Daelim Industrial Co., Ltd.			REV	Date	Designed by	Checked by	Approved by
Location	Vietnam			A	Apr. 18 ,2013	N.H.Kim	B.H.Jung	B.H.Jung
Job No.				B	Aug. 12 ,2013	N.H.Kim	B.H.Jung	B.H.Jung
Project	Thai Binh II Thermal Power Plant			C	Jan. 28 ,2014	N.H.Kim	B.H.Jung	B.H.Jung
Item No.	11LAD10AC007/21LAD10AC007			D	Feb. 20 ,2014	N.H.Kim	B.H.Jung	B.H.Jung
Service	HP Feedwater Heater #7			E	Mar. 07 ,2014	N.H.Kim	B.H.Jung	B.H.Jung
Size	I.D 1730	x	9450 L	Type	Three Zone		Surface per shell	Effective / Gross 2207.3 / 2351.8 m ²
No of shell per unit	One			No.of unit	Three		Position	Horizontal

PERFORMANCE OF ONE SHELL

10			Shell side						Tube Side		
11	Fluid Name		Steam			Drains			Feedwater		
12	Total flowrate	kg/hr	161221			173518			1896507		
13											
14	Inlet Enthalpy	KJ/kg	3047.6			1119.2			892		
15	Outlet Enthalpy	KJ/kg	910.6						1092.8		
16	Inlet Temperature	°C	331.42			256.9			207.1		
17	Outlet Temperature	°C	212.7						251.3		
18	Operating Pressure	bar a	40			72.7			210		
19	Number of Passes		One (1)						Two (2)		
20	Velocity	m/s	0.47						2.42		
21	Pressure drop, Allow.	bar	DSH		CON.		DC			1.14	
22	Pressure drop, Calc.	bar	DSH	0.3187	CON.	0.0009	DC	0.3275	0.8684		
23	Fouling Resistance	m²-K/W	DSH	0.000053	CON.		DC	0.000053	0.000035		
24		Heat Exchanger KW	Effective Surface m²	MTD °C	Transfer Rate W / m²-K				Baffle Type,Q'ty.,Spacing mm	Reference Temperature Difference,°C	
25					Clean		Design				
26	Desuperheating Zone	10468.9	299.6	28.15	1502.5		1305.2		Single Seg.(H), 3, 598		
27	Condensing Zone	79093.3	1595	13.87	4599.3		3772.4		Support, 6, 980		TTD : -1
28	DC Zone	16376.6	312.7	16.56	4996.8		3324.6		Single Seg.(V), 6, 359		DCA : 5.6
29											

CONSTRUCTION-EACH SHELL

31				Shell side				Tube side								
32	Design pressure		bar g	F.V / 47				300								
33	Test pressure		bar g	As per code (70.55)				As per code (450.18)								
34	Design temperature		°C	Shell	265	Skirt	350	285								
35	Corrosion Allowance		mm	1.6 (Tubesheet : 3mm)				1.6 (Tubesheet : 3mm)								
36	Mean Metal Temperature		°C	259.94				232.42								
37	Tubes No.	2495 U	O.D	15.875	mm	Thk.(Avg.)	2.108	mm	Length (Str.)	9450	mm	Pitch	20.64	mm	Layout	30
38	Shell	I.D	1730	mm	O.D	mm	Thk.	33	mm							

Material	Tube	SA556 Gr.C2	Shell Skirt	SA516 Gr.70N	Impingement	SA240 TP304
	Tube sheet	SA350 Gr.LF2 CL1	Shell cover	SA516 Gr.70N	Shrouds	DSH SA240 TP304
	Channel	SA516 Gr.70N	Baffle	SA516 Gr.70		DC SA240 TP304
	Channel Cover	SA516 Gr.70N	Orifice Plate	SS304	Gasket	Shell Spiral Wound
	Shell	SA516 Gr.70N	Support plate	SA516 Gr.70		Channel Spiral Wound

		Shell side				Tube side			
Connection size & Rating		Q'ty	Size	Rating	Remarks	Q'ty	Size	Rating	Remarks
		1	18"		Steam inlet	1	ID580mm		Feedwater Inlet
		1	10"		Drain Outlet	1	ID580mm		Feedwater Outlet
		1	10"		From HP Heater #8				
		1	12"						

Joint method of tube to tubesheet joint	Light Expanding + Strength welding		U-Bend support	Yes	Weir plate	No
Code requirement	ASME SEC.VIII,DIV.1 & Heat Exchange Institute					
Weight / Shell	Empty	See GA Drawing	Operation	See GA Drawing	Filled with water	See GA Drawing KG

Remarks	1) Air removal system shall be installed in shell 2) Tube length shown above means straight length 3) Fouling resistance was applied as per HEI Code. 4) This unit was applied for additional surface area for 5% tube plugging margin. 5) Orifice plate shall be supplied 6) Stud bolt : SA193 B7 (Nozzle) / SA193-B8 (Internal) 7) Setting bolt : SA307-B					
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