KOCH
HEAT TRANSFER CANADA LP

A Koch Chemical Technology Group, LLC Company

TOTAL NO. OF PAGES 1
(EXCLUDING THIS PAGE)

KHTC REFERENCE : T10176 – DS

DOCUMENT TITLE : DATASHEET

EQUIPMENT NAME : SRU FEED STEAM HEATER

CUSTOMER: SHELL ALBIAN SANDS

ITEM NUMBER: 260-SX-101/201 A/B/C/D

P.O. NUMBER: 50274775 002 OP

Rev	Description	By / Date	Chk'd By /Date	App'd By / Date
0	First Issue	KL 2009/5/1	RW 4 May 2009	RW 4 May 2009
1	GENERAL REVISION	KL 2009/5/28	RW 28 May 2009	RW 28 May 2009

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HEAT EXCHANGER SPECIFICATION SHEET

SI Units

			Job No.	T10176	
Customer	Shell Albian Sands		Reference No.		
Address			Proposal No.		
Plant Location			Date	4/28/2009	Rev 1
Service of Unit	SRU Feed Steam Heater		Item No.	260-SX-101R/201R	
Size	1625.60 x 6095.93 mm	Type AEU Horz.	Connected In	4 Parallel	1 Series
Surf/Unit (Gross/Eff)	3136.80 / 3063.21 m2	Shell/Unit 4	Surf/Shell (Gross/Eff)	784.20 / 765.80 m2	

PERFORMANCE OF ONE UNIT

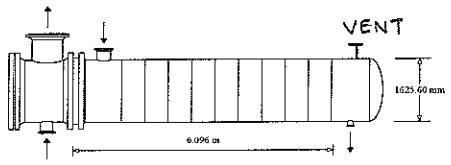
Fluid Allocation		Shell Side		Tube Side	
Fluid Name		Steam		SRU Feed	
Fluid Quantity, Total	kg/hr	267101		2475012	
Vapor (In/Out)		267101			1531618
Liquid			267101	2475012	943394
Steam		267101			
Water			267101		
Noncondensables					
Temperature (In/Out)	C	176.52	176.00	80.00	95.40
Specific Gravity			0.8916	0.6790	0.9395
Viscosity	mN-s/m2	0.0149	0.1538	0.4287	0.0082 V/L 4.8885
Molecular Weight, Vapor					
Molecular Weight, Noncondensables					
Specific Heat	kJ/kg-C	2.6741	4.3907	2.2812	1.9794 V/L 2.027
Thermal Conductivity	W/m-C	0.0348	0.6765	0.0977	0.0199 V/L 0.131
Latent Heat	kJ/kg	2026.25	2027.37	307.846	311.073
Inlet Pressure	kPa	925.013		435.006	
Velocity	m/s	2.09		21.70	
Pressure Drop, Allow/Calc	kPa	35.001	6.912	172.003	170.324
Fouling Resistance (min)	m2-K/W	0.000090		0.000350	

Heat Exchanged W	150951780	MTD (Corrected)	84.0 C		
Transfer Rate, Service	586.53 W/m2-K	Clean	877.25 W/m2-K	Actual	596.12 W/m2-K

CONSTRUCTION OF ONE SHELL

		Shell Side	Tube Side
Design/Test Pressure	kPaG	1494 / Per Code	2241 / Per Code
Design Temperature	C	196/-41	163/-41
No Passes per Shell		1	2
Corrosion Allowance	mm	3	3
Connections Size & Rating	In	1 @ 14" - 300#	1 @ 12" - 300#
	Out	1 @ 6" - 300#	1 @ 30" - 300#
	Vent	1 @ 2"-300#	@

Sketch (Bundle/Nozzle Orientation)



Tube No.	741U OD 25.400 mm	Thk(Min) 2.769 mm	Length 6.096 m	Pitch 33.338 mm	Layout 60
Tube Type	Plain		Material SA-179		
Shell SA-516-70N	ID 1625.60 mm	OD 1657.4 mm	Shell Cover SA-516-70N		
Channel or Bonnet	SA-516-70N		Channel Cover SA-516-70N		
Tubesheet-Stationary	SA-516-70N		Tubesheet-Floating N/A		
Floating Head Cover	N/A		Impingement Plate Rods		
Baffles-Cross	SA-36 Type DOUBLE-SEG.	%Cut (Diam) 29.49	Spacing(c/c) 558.800		
Baffles-Long		Seal Type			
Supports-Tube	SA-36	U-Bend SA-36	Type		
Bypass Seal Arrangement	N/A	Tube-Tubesheet Joint Strength welded & Expanded without groove			
Expansion Joint	N/A	Type			
Rho-V2-Inlet Nozzle	10411.0 kg/m-s2	Bundle Entrance 1079.67	Bundle Exit 4.02	kg/m-s2	
Gaskets-Shell Side	Kammprofile	Tube Side Kammprofile			
-Floating Head					
Code Requirements	ASME Section VIII Div.1		TEMA Class R		
Weight/Shell	32670 Filled with Water 47330		Bundle 19960	kg	

Remarks: 1.Tubeside HT is calculated on basis of convective HT only (no boiling HT), with cold fluid HT multiplier of 0.70.
2. Construction Class 3.