

Air-Cooled Heat Exchanger Specification Sheet

1	Client: AEC Denver										
2	Location: Douglas, WY										
3	Service of Unit: Cooling Water										
4	Item No.: 230928-9										
5	Date: 12/14/2023										
6	Size & Type	34	/	12	ft	Type	Forced	Number of Bays	1		
7	Surf/Unit-Finned Tube	40,517 ft ²			Bare area/bundle	1,889	ft ²	Ratio (Total	21.45		
8	Heat exchanged	6458928 BTU/h			MTD, Eff	51.95 °F					
9	Transfer rate	5.28	Bare, Service		65.82	Clean	149.79 BTU/(h-ft ² -F)				
10	PERFORMANCE DATA - TUBE SIDE										
11	Fluid Circulated	Water				In/Out					
12	Total Fluid Entering	lb/h	161,419		Density, Liq	lb/ft ³	60.677	/	61.533		
13		BPD	10,000		Density, Vap	lb/ft ³	0	/	0		
14	Temperature	°F	180	/	140	Specific Heat, Liq	BTU/(lb-F)	1.0003	/	0.9997	
15	Liquid	lb/h	161419	/	161419	Specific Heat, Vap	BTU/(lb-F)	0	/	0	
16	Vapor	lb/h	0	/	0	Therm. Cond, Liq	BTU/(ft-h-F)	0.384	/	0.372	
17	Noncondensable	lb/h	0	/	0	Therm. Cond, Vap	BTU/(ft-h-F)	0	/	0	
18	Steam	lb/h			Freeze Point	°F					
19	Water	lb/h			Bubble / Dew point	°F					
20	Molecular wt, Vap			/	Latent heat	BTU/lb					
21	Molecular wt, NC			/	Inlet pressure (abs)	psi	114.7				
22	Viscosity, Liq	cp	0.3443	/	0.4744	Pres Drop, Allow/Calc	psi	10	/	4.05	
23	Viscosity, Vap	cp	0.0000	/	0.0000	Fouling resistance	ft ² -h-F/BTU	0.001			
24	PERFORMANCE DATA - AIR SIDE										
25	Air Quantity, Total	1,050,500	lb/h			Altitude	4,836	ft			
26	Air Quantity/Fan	148,116	ft ³ /min			Temperature In	95	°F			
27	Static Pressure	0.66	inH2O			Temperature Out	120	°F			
28	Face Velocity	14.05	ft/s	Bundle velocity	2,990	lb/h/ft ²	Design Ambient	95	°F		
29	DESIGN-MATERIALS-CONSTRUCTION										
30	Design/Vac./Test Pres	300	/	0	/	0	psi	Design temperature	300	°F	
31	TUBE BUNDLE		Header			Tube					
32	Size	34 ft		Type	Box	Material	Carbon Steel				
33	Number/bay	1		Material	Carbon Steel	Specifications					
34	Tube Rows	4		Passes	16	OD	1	Min Thk.	0.065	in	
35	Arrangement			Plug Mat.		No./Bun	234	Lng	32	ft	
36	Bundles	1 par		Gasket Mat.		Pitch	2.313	/	2.003	30 deg	
37	Bays	1 par		Corr. Allow.	0	in	Fin				
38	Bundle frame			Inlet Nozzle	2	3 in	Type	L-finned			
39	MISCELLANEOUS			Outlet nozzle	2	3 in	Material	Aluminum 1060			
40	Struct. Mount.			Special Nozzles			OD	2.25	Tks	0.011 in	
41	Surf.Prepare			Rating	300 ANSI		No.	10	#/in	DesTemp	0 °F
42	Louvers			Ti	Pi		Code	ASME Code Sec VIII Div 1			
43	Vibration Switches			Chem Cleaning			Stamp	Yes	Specs		
44	MECHANICAL EQUIPMENT										
45	Fan, Mfr., Model				Driver, Type	V-belt		Speed Reducer, Type			
46	No./Bay	2	RPM	0	Mfr.	Mfr.&Model					
47	Dia.	10	ft	Blade(s)			No./Bay				
48	Pitch			Angle			RPM	Rating			
49	Blade(s)	0	Hub	0	Enclosure		Ratio				
50	hp/Fan	25	hp	MinAmb	V/Phase/Hz		Support				
51	Control Action on Air Failure-								Louvers		
52	Degree Control of Outlet Process Temperature										
53	Recirculation				Steam Coil			No			
54	Plot Area	0	ft ²	Drawing No.	Wt.Bundle		17,426	Wt. Unit	17,426	lb	
55	Notes:										
56											
57											
58											

Chart Cooler Service Company

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AIR COOLED HEAT EXCHANGER
SPECIFICATION SHEET

1					Date:	12/22/2015 Rev. 1	
2	Customer	KP Engineering			Item No.	374-E-C100 / C200	
3	Plant Location	Tulsa, OK			Job No.	30815	
4	Service	Debutanizer Bottoms Air Cooler			Ref. No.	30815	
5	Size and Type	Model: H120	FORCED	No. Bays	P.O. No. J1422-B-008		
6	Surface/Unit - Finned Tube	82649 ft2		Bare Tube	3920.7 ft2		
7	Heat Exchanged	19,378,400 Btu/h			MTD, Eff.	56.5 °F	
8	Transfer Rate-Finned Tube	4.171 ;Bare Tube, Service		87.92	Clean	114.09 Btu/h.ft2.F	
PERFORMANCE DATA - TUBE SIDE							
10	Fluid Name	DEBUTANIZER BTMS			Vapor Ref. Temp.	°F	
11	Total Fluid In	lb/h	227406		Specific Heat	Btu/lb.F	
12	Vapor	lb/h	0		Viscosity	cP	
13	Liquid	lb/h	227406		Conductivity	Btu/h.ft.F	
14	Noncond	lb/h			Molecular Weight		
15	Steam	lb/h			Liquid Ref. Temp.	°F	
16	Water	lb/h			Specific Heat	Btu/lb.F	
17	Fluid Cond./Vapzd.	lb/h	0		Viscosity	cP	
18	Temperature In/Out	°F	266.00 / 120.00		Conductivity	Btu/h.ft.F	
19	Pressure	psia	160.2		Density	lb/ft3	
20	Velocity In/Out	ft/s	6.37 / 6.37				
21	Press. Drop Allow/Cal	psi	15.000 / 13.386		Fouling resistance	h.ft2.F/Btu	
PERFORMANCE DATA - AIR SIDE (Air)							
23	Air Quantity, Total	lb/h	2096366		Altitude above Sea Level	ft	
24	Air Quantity/Fan	acfm	126711		Temperature In (Dry Bulb)	°F	
25	Actual Static Press	in H2O	0.644		Temperature Out	°F	
26	Face Velocity	sfm	637		Min. Design Ambient	°F	
27	Max Mass Velocity	lb/h.ft2	6040.8		Fan Air Temperature	°F	
DESIGN - MATERIALS - CONSTRUCTION							
29	Design Pressure	300.00 / 15 (ext) psig		Test Pressure	350		Design Temperature
30	TUBE BUNDLE			HEADER, Type	Plug Box		TUBE, Material
31	Size	11.427 X 32.000		Material	SA-516 70		SA-214
32	No./Bay 2	No./Rows 4	No. Passes 6		Welded		
33	Arrangement			Slope	0		OD
34	Bundles	Parallel		in/ft	No./Bundle		1 Thick 0.109 in
35	Bays	Parallel		Plug Material	SA-105		234
36	MISCELLANEOUS			Gasket Material	CS		Length
37	Struct. Mount	Grade c/c		Corrosion Allow.	.125 in		Pitch
38	Surf Prep	SSPC-2		No. Size in Nozz.	2 - 3" 300# RF-WN		2.3125 in
39	Surf Finish	Galvanize		No. Size Out Nozz.	2 - 3" 300# RF-WN		Fin, Type
40	Half Guards	Integral		Vent and Drain	1" 300# RF-WN		Material
41	Louvers / Actuators	Auto / Dura Stroke 1100		TI:	Pl: 1" 300# RF-WN		OD
42	Vibration Switches	Murphy VS2EX		Header Prep	SSPC-SP-5		2.25 Thk 0.015 in
				Header Finish	Metalized		No./in
							10 Fin Design Temp
							425.00
							Code - Stamp Yes
							X-RAY API Spot PWHT Yes
							SPECS. API-661 Yes
MECHANICAL EQUIPMENT							
44	Fan Mfg			Driver	Tag#: 374-M-6800/6801/6802/6803		Speed Reducer
45	Model Class 10000	Series 36 SC VT		Type	NEMA-1.15SF-IEEE-841 Eff.		Type
46	No./ Bay 2	Rev/Min 339		Mfg.	Seimens		V-Belt
47	Dia. ft 10	No. Blades 6		No/Bay	2 Frame 284T		Mfg. Gates
48	Pitch 19.39	Manual		hp /Driver	25		Model
49	Mat'l:Blade	AL	Hub AL	Rev/Min	1750		4/5VX1000 QD4/5V23.60
50	hp/Fan, Design	21.79		Enclosure	TEFC Ins F TR B		No/Bay
51	hp/Fan, Min Amb	27.83		Volt;Phase;Cycle	460/3/60		2 QD4/5V4.65
52	Plot Area	32 x 11.42708		Support	Structure		AGMA Rating, hp
53	Walkways	Width	Type	Total Weight (per bay)	27720		1.4
54	Inlet	30"	Serrated Grate	Recirculation: None			Ratio
55	Outlet	30"	Serrated Grate				5.162
56	Drive						Support Structure
57							Dry
58							Coil Vol
60							236 Gal
							Wind Load
							31 PSF / 90 mph
							Seismic Zone
							In Accordance with J-1422 Design Basis