



FABSCO LLC.

P.O. Box 988
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AIR COOLED EXCHANGER SPECIFICATION SHEET

1				Date:	4/10/2024	Rev.	3
2	Equipment Owner	Air Products Manufacturing LLC	Customer/Client:	World Energy Paramount	Item No.	18-XF-352A/B-SC	
3	Plant Location	World Energy, Paramount, CA, USA	Job No.:	A22-13312	Proj No./Unit:	EN-20-7119 / RFJU-B	
4	Service	Steam Coil for Diesel Product Cooler	Project:	World Energy Renewables Project	PO No.:	4505606036 / A8KM-4-406-PO-1	
5	Size and Type	FORCED		No. Bays	2		
6	Surface/Unit - Finned Tube	18998 ft ²	Bare Tube	820.74 ft ²			
7	Heat Exchanged	17535000 Btu/h	MTD, Eff.	311.3 °F			
8	Transfer Rate-Finned Tube	3.58	Bare Tube, Service	82.9	Clean	106.5 Btu/h.ft ² .F	

PERFORMANCE DATA - TUBE SIDE

10	Fluid Name	Steam/Water		Vapor Ref. Temp.	°F	365.9	
11	Total Fluid In	lb/h	20000	Specific Heat	Btu/lb.F	0.491	
12	Vapor	lb/h		Viscosity	cP	0.0152	
13	Liquid	lb/h		Conductivity	Btu/h.ft.F	0.021	
14	Noncond	lb/h		Density	lb/ft ³	0.3563	
15	Steam	lb/h	20000	Liquid Ref. Temp.	°F	365.17	
16	Water	lb/h	20000.0	Specific Heat	Btu/lb.F	1.1276	
17				Viscosity	cP	0.1458	
18	Temperature In/Out	°F	365.9	365.17	Conductivity	Btu/h.ft.F	0.3884
19	Pressure in / Out	psig	164.70	163.79	Density	lb/ft ³	55.059
20	Velocity	ft/s	22.64				
21	Press. Drop Allow/Calc	psi	0.909		Fouling resistance	h.ft ² .F/Btu	0.002

PERFORMANCE DATA - AIR SIDE (Air)

23	Air flow rate/item	(SCFM)	438703	Altitude above Sea Level	ft	69
24	Air Quantity/Fan	(ACFM)	102827	Temperature In (Dry Bulb)	°F	35
25	Actual Static Press (steam coil only)	in H ₂ O	0.05	Temperature Out	°F	71.98
26	Face Velocity	(SFPM)		Min. Design Ambient	°F	35
27	Max Mass Velocity	lb/h.ft ²		Fan Air Temperature	°F	35

DESIGN - MATERIALS - CONSTRUCTION

29	Design Pressure psig	FV/	232	Test Pressure psig	302	Design Temperature	430.0	32	°F		
30	TUBE BUNDLE	HEADER, Type		PIPE	TUBE, Material		SA-179				
31	Size	13.8 x 28.5		ft	Material	SA 106B		SEAMLESS			
32	No./Bay	1	No. Rows	1	No. Passes	1	OD	1	Thickness	0.12	in
33	Arrangement	Bundles in Series		Slope	0.25 in/ft LAST PASS		No./Bundle	55			
34	Bundles	2 Bundles in parallel		Corr Allow	0.125 in		Length	28.5			ft
35	Bays	2 Bays in parallel		End Plate Material	SA 516-70N		Pitch	3			in
36	Bundle Frame Finish	Galvanized		Flange Material	SA-350-LF2		Fin, Type	EMBEDDED			
37	Header Finish	System 5 after hydro		In qty/in.	2	3	Material	ALUMINUM			
38	Structure Finish	Galvanized		Out qty/in.	2	3	OD	2.25 Thk.	0.016	in	
39	Mounting/C TO C			Special Nozzles	NONE		No./in	11	Fin Design Temp	430.0	
40	Surf Prep	SSPC SP 10		Rating/Facing	300# RFWN		Code -	ASME Section VIII Div 1			
41	Louvres / Guards			TI	PI		Natl Board Stamp	YES			
42	Vibration Switches			Chem Cleaning			SPECS.				

MECHANICAL EQUIPMENT

44	Fan Mfg	Driver		Speed Reducer			
45	Model	Type		Type			
46	No./Bay	Mfg.		Mfg.			
47	Fan Diam. Ft	No/Bay		Model			
48	Manual Adjust	hp /Driver		No/Bay			
49	Mat'l:Blade	Rev/Min		AGMA Rating, hp			
50	hp/Fan, Design	Enclosure		Ratio			
51	hp/Fan, Min Amb	Volt;Phase;Cycle		Support			
52	Plot Area	Bundle WT Dry lb	7327	Full H2O	7696	API Noz Mult.	2
53	Weight per bay lbs.					Heat Treat	NO
54	Weight per unit.					NDE	ASME
55							
56	1. Spot RT end plates. 100% RT butt welds.						
57	2. Header finish per A8KM-PP-000-500520-A. Structure galvanized per A8KM-PP-000-500540-A.						
58	3. Wall thickness under fin = 0.109"						



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Table with 2 columns: Item No. and Description. Includes fields for Equipment Owner, Plant Location, Service, Size and Type, Surface/Unit - Finned Tube, Heat Exchanged, and Transfer Rate-Finned Tube.

PERFORMANCE DATA - TUBE SIDE table with 2 columns: Item No. and Description. Includes Fluid Name, Total Fluid In, Vapor, Liquid, Noncond, Steam, Water, Temperature In/Out, Pressure In / Out, Velocity, and Press. Drop Allow/Calc.

PERFORMANCE DATA - AIR SIDE (Air) table with 2 columns: Item No. and Description. Includes Std. air flow rate/item, Air Quantity/Fan, Actual Static Press, Face Velocity, and Max Mass Velocity.

DESIGN - MATERIALS - CONSTRUCTION table with 2 columns: Item No. and Description. Includes Design Pressure psig, TUBE BUNDLE, Size, No./Bay, Arrangement, Bundle Frame Finish, Header Finish, Structure Finish, Mounting/C TO C, Surf Prep, Louvres / Guards, and Vibration Transmitter.

MECHANICAL EQUIPMENT table with 2 columns: Item No. and Description. Includes Fan Mfg, Model, No./Bay, Fan Diam. Ft, Manual Adjust, Mat'l:Blade, hp/Fan, Design, hp/Fan, Min Amb, Plot Area per Bay, Weight per bay lbs., Weight per unit lbs., dBA @ 3', Fan Wt Lbs, Driver, Speed Reducer, and various performance and material specifications.

- 1. 10% plug & plug gasket included as spares
2. The motors will have a 1.15 SF on sine-wave power (constant frequency/speed) and will have a 1.0 SF at variable frequency.
3. Tube-tubesheet strength welded (no PWHT). Mockup required. Helium leak test
4. Spot RT per API 661 after PWHT.
5. Tube wall thickness under fin = 0.109"
6. Special Service: UOP 4-13-11 SPEC REQUIREMENTS APPLY. FLAMMABLE REQUIREMENTS IN ATTACHMENT C APPLY.
7. Air seal provided between bays A/B. Thrust block provided for multi bay service
8. Surface prep and primer for short columns and spanning beams: Table A-2 System 4B of A8KM-PP-000-500520-A Painting. Steel prep'd and primed for fireproof shall not be galvanized.
9. Individual header compartments shall have provision for vent/drain. Split header vents and drains shall be 1" RFWN with 90 deg elbow & blind
10. Front split header between row 2 & 3.
11. Irregular pass arrangement: 4 rows 2 pass; 4 rows 4 pass
12. Galvanized per A8KM-PP-000-500540 except fireproofed Structural Steel
13. System 5 after Hydrotest per A8KM-PP-000-500520
14. Anti-rotation safety device provided on fan shaft bushing per fan: MOORE FAN MODEL "AIRBRAKE F BUSHING MOUNT"
15. Two (2) tube skin thermocouples, weld pad type with thermal cement and clamp-on with insulation (for 2 tubes of the process bundle).