

DOCKETED

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API 661 Air-Cooled Heat Exchanger - Specification Sheet

Job No. _____
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 Proposal No. _____
 Inquiry No. _____

Item No. _____
 By _____
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Manufacturer	_____	Heat exchanged (Btu/hr)	2.23e+8
Model no.	_____	Surface/Item-Finned tube (ft2)	3242625
Customer	_____	Bare tube (ft2)	151083
Plant location	_____	MTD, Eff. (Deg. F)	12.6
Service	_____	Transfer rate-Finned (Btu/ft2-hr-F)	5.488
Type draft	FORCED	Bare tube, service (Btu/ft2-hr-F)	117.78
Bay size (WxL) (ft)	13.990 x 60.000	Bare tube, clean (Btu/ft2-hr-F)	126.22
No. of bays/Items	20		

Basic design data

Pressure design code	_____	Structural code	_____
Tube bundle code stamped	_____	Flammable service	_____
Heating coil code stamped	_____	Lethal/toxic service	_____

Performance Data - Tube Side

Fluid name	20%PG				
Total fluid entering (lb/hr)	6800000	Total flow rate (Liq/Vap) (lb/hr)	In 6800000 / 0.0	Out 6800000 / 0.0	
Dew/bubble point (Deg. F)	/	Water/Steam (lb/hr)	0.0 / 0.0	0.0 / 0.0	
(Deg. F)		Noncondensables (lb/hr)	0.0	0.0	
Latent heat (Btu/lb)		Molecular Wt. (Vap/Non-cond)	/	/	
Inlet pressure (psia)	65.000	Density (Liq/Vap) (lb/ft3)	63.044 /	63.490 /	
Pressure drop (All/Calc) (psi)	13.000 / 7.024	Specific heat (Liq/Vap) (Btu/lb-F)	0.9752 /	0.9706 /	
Velocity (Allow/Calc) (ft/sec)	/ 2.91	Thermal cond. (Liq/Vap) (Btu/hr-ft-F)	0.2950 /	0.2850 /	
Inside fouling resistance (ft2-hr-F/Btu)	0.00050	Viscosity (Liq/Vap) (cP)	1.0722 /	1.8034 /	
	In Out				
Temperature (Deg. F)	106.00	72.30			

Performance Data - Air Side

Air inlet temperature (Deg. F)	65.30	Face velocity (SFPM)	655.00
Air flow rate/item (SCFM)	1.09e+7	Minimum design ambient temp. (Deg. F)	15.80
Mass velocity (lb/hr-ft2)		Altitude (ft)	20.000
Air outlet temperature (Deg. F)	84.06	Static pressure (inH2O)	0.699
Air flow rate/fan (ACFM)	181661		

Design, Material, and Construction

Design pressure (psig)	_____	Heating Coil	
Test pressure (psig)	_____	No. of tubes	_____
Design temperature (Deg. F)	_____	Tube outside diameter (inch)	_____
Min. design metal temp. (Deg. F)	_____	Tube material	_____
Tube bundle		Fin material and type	_____
Size (WxL) (ft)	13.906 X 60.000	Fin thickness (inch)	_____
No./Bay	1	ASME Code, Sec. VIII, Div. 1	_____
Number of tube rows	7	Heating fluid	_____
Bundles in parallel	20	Heating fluid flow rate (lb/hr)	_____
Bundles in series	_____	Temperature (In/Out) (Deg. F)	_____ / _____
Structure mounting	_____	Inlet pressure (psia)	_____
Pipe rack beams	_____	Pressure drop (All/Calc) (psi)	_____ / _____
Ladders, walkways, platforms	_____	Design temperature (Deg. F)	_____
Structure surface prep.	_____	Design pressure (psia)	_____
Header surface prep.	_____	Inlet/Outlet nozzle	_____ / _____
Louver		Header	
Material	_____	Type	_____
Action control	_____	Material	_____
Action type	_____	Corrosion Allowance (inch)	_____
		No. of passes	4



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Design, Material, and Construction (continued)

Header (continued)				No./Bundle	487
Slope	_____	Length	(ft)	60.000	
Plug material	_____	Pitch	(inch)	2.3750	
Gasket material	_____	Layout		Triangular	
Nozzle	No.	Size, (inch)	Rating/Facing	Fin	
Inlet	1	8.0000	_____	Type	Circular
Outlet	1	8.0000	_____	Material	Aluminum 1060 - H14
Vent	_____	_____	_____	Thickness	(inch) 0.0160
Drain	_____	_____	_____	Selection temp.	(F) _____
Chemical Cleaning	_____	_____	_____	Outside diameter	(inch) 2.2500
Min. Wall Thk.	_____	_____	_____	Fin density	(fin/inch) 10.0
Tube				ASME Code, Sec. VIII, Div. 1	_____
Material	_____	_____	Carbon steel	Customer Specifications	_____
Tube outside diameter	(inch)	_____	1.0000		
Average wall thickness	(inch)	_____	0.0600		

Mechanical Equipment

Fan				RPM	_____
Manufacturer	_____	Unknown Manufacturer		Service factor	_____
No./Bay	_____	3		Enclosure	_____
RPM	(Revs/min.)	_____	0.0000	Voltage	_____
Diameter	(ft)	_____	12.000	Phase	_____
No. of blades	_____	_____	_____	Cycle	_____
Angle	(degrees)	_____	_____	Fan noise level	(dB) _____
Pitch adjustment	_____	_____	_____	Speed Reducer	
Blade material	_____	_____	_____	Type	_____
Hub material	_____	_____	_____	Manufacturer	_____
BHP @ design temp	_____	_____	_____	No./Bay	_____
BHP @ min. ambient temp	_____	_____	_____	Service factor	_____
Tip speed	_____	_____	_____	Speed ratio	_____
Driver				Support	_____
Type	_____	_____	_____	Vib. switch	_____
Manufacturer	_____	_____	_____	Enclosure	_____
No./Bay	_____	_____	_____		
Driver	(hp)	_____	32.80		

Controls - Air Side

Air recirculation	_____	Louvers	_____
Degree control of outlet process temp.	_____	Positioner	_____
(Max. Cooling), +/-	_____ / _____	Signal air pressure (psia)	_____
Action on control signal failure	_____	From	_____ To _____
Fan pitch	_____	From	_____ To _____
Louvers	_____	Supply air pressure (psia)	_____
Actuator air supply	_____	From	_____ To _____
Fan	_____	From	_____ To _____

Shipping

Plot area (WxL)	(ft)	13.990 x 60.000	Total	(lb)	1507218
Bundle weight	(lb)	46503	Shipping	(lb)	_____
Bay	(lb)	_____			



API 661 Air-Cooled Heat Exchanger - Specification Sheet

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Inquiry No.	_____	Order No.	_____

Manufacturer	_____	Heat exchanged (Btu/hr)	2.24e+8
Model no.	_____	Surface/Item-Finned tube (ft2)	3242625
Customer	_____	Bare tube (ft2)	151083
Plant location	_____	MTD, Eff. (Deg. F)	13.0
Service	_____	Transfer rate-Finned (Btu/ft2-hr-F)	5.915
Type draft	FORCED	Bare tube, service (Btu/ft2-hr-F)	126.95
Bay size (WxL) (ft)	13.990 x 60.000	Bare tube, clean (Btu/ft2-hr-F)	136.82
No. of bays/Items	20		

Basic design data

Pressure design code	_____	Structural code	_____
Tube bundle code stamped	_____	Flammable service	_____
Heating coil code stamped	_____	Lethal/toxic service	_____

Performance Data - Tube Side

Fluid name	20%PG				
Total fluid entering (lb/hr)	6800000	Total flow rate (Liq/Vap) (lb/hr)	In 6800000 / 0.0	Out 6800000 / 0.0	
Dew/bubble point (Deg. F)	/	Water/Steam (lb/hr)	0.0 / 0.0	0.0 / 0.0	
(Deg. F)		Noncondensables (lb/hr)	0.0	0.0	
Latent heat (Btu/lb)		Molecular Wt. (Vap/Non-cond)	/	/	
Inlet pressure (psia)	65.000	Density (Liq/Vap) (lb/ft3)	62.522 /	62.954 /	
Pressure drop (All/Calc) (psi)	13.000 / 6.291	Specific heat (Liq/Vap) (Btu/lb-F)	0.9816 /	0.9764 /	
Velocity (Allow/Calc) (ft/sec)	/ 2.93	Thermal cond. (Liq/Vap) (Btu/hr-ft-F)	0.3078 /	0.2975 /	
Inside fouling resistance (ft2-hr-F/Btu)	0.00050	Viscosity (Liq/Vap) (cP)	0.6756 /	0.9649 /	
	In Out				
Temperature (Deg. F)	148.00	114.30			

Performance Data - Air Side

Air inlet temperature (Deg. F)	107.00	Face velocity (SFPM)	655.00
Air flow rate/item (SCFM)	1.09e+7	Minimum design ambient temp. (Deg. F)	15.80
Mass velocity (lb/hr-ft2)		Altitude (ft)	20.000
Air outlet temperature (Deg. F)	125.56	Static pressure (inH2O)	0.774
Air flow rate/fan (ACFM)	198301		

Design, Material, and Construction

Design pressure (psig)	_____	Heating Coil	
Test pressure (psig)	_____	No. of tubes	_____
Design temperature (Deg. F)	_____	Tube outside diameter (inch)	_____
Min. design metal temp. (Deg. F)	_____	Tube material	_____
Tube bundle		Fin material and type	_____
Size (WxL) (ft)	13.906 X 60.000	Fin thickness (inch)	_____
No./Bay	1	ASME Code, Sec. VIII, Div. 1	_____
Number of tube rows	7	Heating fluid	_____
Bundles in parallel	20	Heating fluid flow rate (lb/hr)	_____
Bundles in series	_____	Temperature (In/Out) (Deg. F)	_____ / _____
Structure mounting	_____	Inlet pressure (psia)	_____
Pipe rack beams	_____	Pressure drop (All/Calc) (psi)	_____ / _____
Ladders, walkways, platforms	_____	Design temperature (Deg. F)	_____
Structure surface prep.	_____	Design pressure (psia)	_____
Header surface prep.	_____	Inlet/Outlet nozzle	_____ / _____
Louver		Header	
Material	_____	Type	_____
Action control	_____	Material	_____
Action type	_____	Corrosion Allowance (inch)	_____
		No. of passes	4



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Design, Material, and Construction (continued)

Header (continued)				No./Bundle	487
Slope	_____	Length	(ft)	60.000	
Plug material	_____	Pitch	(inch)	2.3750	
Gasket material	_____	Layout		Triangular	
Nozzle				Fin	
Inlet	No.	Size, (inch)	Rating/Facing	Type	Circular
Outlet	1	8.0000	_____	Material	Aluminum 1060 - H14
Vent	1	8.0000	_____	Thickness	(inch) 0.0160
Drain	_____	_____	_____	Selection temp.	(F) _____
Chemical Cleaning	_____	_____	_____	Outside diameter	(inch) 2.2500
Min. Wall Thk.	_____	_____	_____	Fin density	(fin/inch) 10.0
Tube				ASME Code, Sec. VIII, Div. 1	_____
Material	_____	_____	Carbon steel	Customer Specifications	_____
Tube outside diameter	(inch)	_____	1.0000	_____	_____
Average wall thickness	(inch)	_____	0.0600	_____	_____

Mechanical Equipment

Fan				RPM	_____
Manufacturer	_____	Unknown Manufacturer	_____	Service factor	_____
No./Bay	_____	_____	3	Enclosure	_____
RPM	(Revs/min.)	_____	0.0000	Voltage	_____
Diameter	(ft)	_____	12.000	Phase	_____
No. of blades	_____	_____	_____	Cycle	_____
Angle	(degrees)	_____	_____	Fan noise level	(dB) _____
Pitch adjustment	_____	_____	_____	Speed Reducer	
Blade material	_____	_____	_____	Type	_____
Hub material	_____	_____	_____	Manufacturer	_____
BHP @ design temp	_____	_____	_____	No./Bay	_____
BHP @ min. ambient temp	_____	_____	_____	Service factor	_____
Tip speed	_____	_____	_____	Speed ratio	_____
Driver				Support	_____
Type	_____	_____	_____	Vib. switch	_____
Manufacturer	_____	_____	_____	Enclosure	_____
No./Bay	_____	_____	_____	_____	_____
Driver	(hp)	_____	39.53	_____	_____

Controls - Air Side

Air recirculation	_____	Louvers	_____
Degree control of outlet process temp.	_____	Positioner	_____
(Max. Cooling), +/-	_____ / _____	Signal air pressure (psia)	_____
Action on control signal failure	_____	From	_____ To _____
Fan pitch	_____	From	_____ To _____
Louvers	_____	Supply air pressure (psia)	_____
Actuator air supply	_____	From	_____ To _____
Fan	_____	From	_____ To _____

Shipping

Plot area (WxL)	(ft)	13.990 x 60.000	Total	(lb)	1507218
Bundle weight	(lb)	46503	Shipping	(lb)	_____
Bay	(lb)	_____	_____	_____	_____