

API 661 Air-Cooled Heat Exchanger - Specification Sheet



Based on
GEA
Btt-Batignolles
Technologies
Thermiques
FRANCE

Job No. _____
Page Page 1 of 2
Date March 13, 2024
Proposal No. 02612N
Inquiry No. _____

Item No. Air Cooler
By _____
Revision B02
Contract No. _____
Order No. _____
No. of Item 2

Manufacturer	Damafin Thermal Technology Co.	Heat exchanged (kW)	252.
Model no.		Surface/Item-Finned tube (m2)	1579.2
Customer	ENER Teknoloji	Bare tube (m2)	68.101
Plant location		MTD, Eff. (Deg. C)	6.8
Service		Transfer rate-Finned (W/m2-K)	26.509
Type draft	FORCED	Bare tube, service (W/m2-K)	614.72
Bay size (WxL) (m)	2.65 X 6.4	Bare tube, clean (W/m2-K)	708.15
No. of bays/items	1		

Basic design data

Pressure design code	ASME VIII div 1 + API 661	Structural code	UBC 97
Tube bundle code stamped	No.	Flammable service	Yes.
Heating coil code stamped	No.	Lethal/toxic service	No.

Performance Data - Tube Side

Fluid name		Propane		In		Out	
Total fluid entering (kg/hr)	3089.2	Total flow rate (Liq/Vap) (kg/hr)	0.0000 / 3089.2	3089.2 /	0.0000		
Dew/bubble point (Deg. C)	/	Water/Steam (kg/hr)	0.0000 / 0.0000	0.0000 /	0.0000		
Latent heat (kJ/kg)		Noncondensables (kg/hr)	0.0000	0.0000	0.0000		
Inlet pressure (bara)	19.867	Molecular Wt. (Vap/Non-cond)	/	/	/		
Pressure drop (All/Calc) (bar)	0.200 / 0.015	Density (Liq/Vap) (kg/m3)	435.50 / 42.251	435.58 /	46.266		
Velocity (Allow/Calc) (m/s)	/ 0.83	Specific heat (Liq/Vap) (kJ/kg-C)	3.6130 / 2.3072	3.6115 /	2.3963		
Inside fouling resistance (m2-K/W)	0.000170	Thermal cond. (Liq/Vap) (W/m-C)	0.0763 / 0.0248	0.0763 /	0.0239		
Temperature (Deg. C)	In 67.94 / Out 56.66	Viscosity (Liq/Vap) (cP)	0.0728 / 0.0105	0.0729 /	0.0103		

Performance Data - Air Side

Air inlet temperature (Deg. C)	48.00	Face velocity (m/s)	3.25
Air flow rate/item (m3/s)	46.975	Minimum design ambient temp (Deg. C)	5.00
Mass velocity (kg/s-m2)		Altitude (m)	20.000
Air outlet temperature (Deg. C)	52.06	Static pressure (Pa)	108.40
Air flow rate/fan (m3/s)	27.733		

Design, Material, and Construction

Design pressure (barG)	22 + F.V	Heating Coil	NO.
Test pressure (barG)		No. of tubes	
Design temperature (Deg. C)	120.00	Tube outside diameter (mm)	
Min. design metal temp. (Deg. C)		Tube material	
Tube bundle		Fin material and type	
Size (WxL) (m)	2.5 X 6.4	Fin thickness (mm)	
No./Bay	1	ASME Code, Sec. VIII, Div. 1	
Number of tube rows	4	Heating fluid	
Bundles in parallel	1	Heating fluid flow rate (kg/hr)	
Bundles in series		Temperature (In/Out) (Deg. C)	/
Structure mounting	Grade	Inlet pressure (bar)	
Pipe rack beams		Pressure drop (All/Calc) (kPa)	/
Ladders, walkways, platforms		Design temperature (Deg. C)	
Structure surface prep.		Design pressure (bar)	
Header surface prep.		Inlet/Outlet nozzle	/
Louver	NO.	Header	
Material		Type	Plug
Action control		Material	SA-516 Gr70(N)
Action type		Corrosion Allowance (mm)	3
		No. of passes	4
		Tube / Tubesheet	Strength weld

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Design, Material, and Construction (continued)

Header (continued)		Please recheck the size with HTRI File. 4" for inlet and 2" for outlet is more desirable. please recheck.		No./Bundle	140
Slope / Split	_____	% on last pass /	No	Length	(m) 6.096
Plug material	_____	SA 350 LF2 CL.1		Pitch	(mm) 69.850
Gasket material	_____	Soft Iron		Layout	Triangular
Nozzle		No.	Size (in)	Rating/Facing	
Inlet	_____	1	6	#300	
Outlet	_____	2	4	#300	
Vent	_____				
Drain	_____				
Chemical Cleaning	_____				
Min. Wall Thk.	_____				
Tube					
Material	_____			SA-334 6	
Tube outside diameter	(mm)			25.400	
Min wall thickness	(mm)			1.651	
				Fin	
				Type	Extruded
				Material	Aluminum
				Thickness (Base / Tip)	(mm) 1 / 0.24
				Selection temp.	(C) _____
				Outside diameter	(mm) 57.150
				Fin density	(fin/meter) 433.1
				ASME Code, Sec. VIII, Div. 1	_____
				Customer Specifications	_____

Mechanical Equipment

Fan		Axial Fans Int Srl (or equivalent)		RPM	1500
Manufacturer	_____			Service factor	_____
No./Bay	_____		2	Enclosure	Exec / IP55
RPM	_____		(Revs/min.)	Voltage	400
Diameter	(ft)		7	Phase	3
No. of blades	_____			Cycle	50
Angle	(degrees)			Fan noise level	(dB) max 85
Pitch adjustment	_____		100% Manual	Speed Reducer	
Blade material	_____			Type	V- belt
Hub material	_____			Manufacturer	_____
@design temp	(kW)			No./Bay	2
@min. ambient temp	_____			Service factor	_____
Tip speed	_____			Speed ratio	_____
Driver				Support	_____
Type	_____			Vib. switch	YES
Manufacturer	_____			Enclosure	_____
No./Bay	_____				
Driver	(kW)		7.5		

Controls - Air Side

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

Shipping

Plot area (WxL)	(m) 2.65 X 6.4	Total weight, Dry / Wet (Kg)	(Based On HTRI) 11,800 / 12,300
Bundle weight	(kg)	Shipping	(kg)
Bay	(kg)		

1) STD. nominated power.