

## Air-Cooled Heat Exchanger - Specification Sheet



Based on  
**GEA**  
 Btt-Batignolles  
 Technologies  
 Thermiques  
 F R A N C E

Job No. \_\_\_\_\_  
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 Date April 8, 2024  
 Proposal No. 02612N  
 Inquiry No. \_\_\_\_\_

Item No. Air Cooler  
 By \_\_\_\_\_  
 Revision B03  
 Contract No. \_\_\_\_\_  
 Order No. \_\_\_\_\_  
 No. of Item 1

Manufacturer	Damafin Thermal Technology Co.	Heat exchanged (kW)	252.
Model no.		Surface/Item-Finned tube (m <sup>2</sup> )	1579.2
Customer	ENER Teknoloji	Bare tube (m <sup>2</sup> )	68.101
Plant location		MTD, Eff. (Deg. C)	6.8
Service		Transfer rate-Finned (W/m <sup>2</sup> -K)	26.508
Type draft	FORCED	Bare tube, service (W/m <sup>2</sup> -K)	614.71
Bay size (WxL) (m)	2.65 X 6.4	Bare tube, clean (W/m <sup>2</sup> -K)	708.13
No. of bays/items	1		

### Basic design data

Pressure design code	ASME VIII div 1	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 (bar)	19.867	Molecular Wt. (Vap/Non-cond)	/	/	/		
Pressure drop (All/Calc) (bar)	0.200 / 0.016	Density (Liq/Vap) (kg/m <sup>3</sup> )	435.50 / 42.251	435.59 /	46.262		
Velocity (Allow/Calc) (m/s)	/ 0.83	Specific heat (Liq/Vap) (kJ/kg-C)	3.6130 / 2.3072	3.6114 /	2.3962		
Inside fouling resistance (m <sup>2</sup> -K/W)	0.000170	Thermal cond. (Liq/Vap) (W/m-C)	0.0763 / 0.0248	0.0763 /	0.0239		
Temperature (Deg. C)	In      Out	Viscosity (Liq/Vap) (cP)	0.0728 / 0.0105	0.0729 /	0.0103		
	67.94      56.66						

### Performance Data - Air Side

Air inlet temperature (Deg. C)	48.00	Face velocity (m/s)	3.25
Air flow rate/item (m <sup>3</sup> /s)	46.975	Minimum design ambient temp (Deg. C)	5.00
Mass velocity (kg/s-m <sup>2</sup> )		Altitude (m)	20.000
Air outlet temperature (Deg. C)	52.06	Static pressure (Pa)	108.40
Air flow rate/fan (m <sup>3</sup> /s)	27.733		

### Design, Material, and Construction

Design pressure (barG)	22 + F.V	<b>Heating Coil</b>	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	
<b>Tube bundle</b>		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	/
<b>Louver</b>	NO.	<b>Header</b>	
Material		Type	Plug
Action control		Material	SA-516 Gr70(N)
Action type		Corrosion Allowance (mm)	3
		No. of passes	4
		Tube / Tubesheet	Strength weld

## API 661 Air-Cooled Heat Exchanger - Specification Sheet



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### Design, Material, and Construction (continued)

<b>Header (continued)</b>				No./Bundle	140
Slope / Split	1% 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
<b>Nozzle</b>	No.	Size, (in)	Rating/Facing	<b>Fin</b>	
Inlet	1	4	#300	Type	Extruded
Outlet	1	2	#300	Material	Aluminum
Vent				Thickness (Base / Tip)	(mm) 1 / 0.24
Drain				Selection temp.	(C) _____
Chemical Cleaning				Outside diameter	(mm) 57.150
Min. Wall Thk.				Fin density	(fin/meter) 433.1
<b>Tube</b>				ASME Code, Sec. VIII, Div. 1	
Material			SA-334 6	Customer Specifications	
Tube outside diameter	(mm)		25.400		
Min wall thickness	(mm)		1.651		

### Mechanical Equipment

<b>Fan</b>				RPM	1500
Manufacturer	Axial Fans Int Srl (or equivalent)			Service factor	
No./Bay			2	Enclosure	Exec / IP55
RPM	(Revs/min.)		404	Voltage	400
Diameter	(ft)		7	Phase	3
No. of blades				Cycle	50
Angle	(degrees)			Fan noise level	(dB) max 85
Pitch adjustment			100% Manual	<b>Speed Reducer</b>	
Blade material			Aluminium	Type	V- belt
Hub material			Manufacturer Standard	Manufacturer	
@design temp	(kW)			No./Bay	2
@min. ambient temp				Service factor	
Tip speed				Speed ratio	
<b>Driver</b>				Support	
Type			Electrical	Vib. switch	YES
Manufacturer			OME ELECTRIC OR AVL	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.**