





API 661 Air-Cooled Heat Exchanger - Specification Sheet									
<div><div></div><div><div>Based on</div><div></div><div>Btt-Batignolles Technologies Thermiques F R A N C E</div></div></div>				Job No.		Item No.		Air Cooler	
				Page		Page 1 of 2		By	
				Date		March 13, 2024		Revision	
				Proposal No.		02612N		Contract No.	
				Inquiry 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	
				(Deg. C)		Noncondensables		(kg/hr) 0.0000 0.0000	
Latent heat				(kJ/kg)		Molecular Wt. (Vap/Non-cond)		/	
Inlet pressure				(bara) 19.867		Density (Liq/Vap)		(kg/m3) 435.50 / 42.251 435.58 / 46.266	
Pressure drop (All/Calc)				(bar) 0.200 / 0.015		Specific heat (Liq/Vap)		(kJ/kg-C) 3.6130 / 2.3072 3.6115 / 2.3963	
Velocity (Allow/Calc)				(m/s) / 0.83		Thermal cond. (Liq/Vap)		(W/m-C) 0.0763 / 0.0248 0.0763 / 0.0239	
Inside fouling resistance (m2-K/W)				0.000170		Viscosity (Liq/Vap)		(cP) 0.0728 / 0.0105 0.0729 / 0.0103	
Temperature				(Deg. C) In 67.94 Out 56.66					
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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		Page		Page 2 of 2		By			
		Date		March 13, 2024		Revision		B02	
		Proposal No.		02612N		Contract No.			
		Inquiry No.				Order No.			
Design, Material, and Construction (continued)									
Header (continued)				No./Bundle140					
Slope / Split1% on last pass / No				Length(m)6.096					
Plug materialSA 350 LF2 CL.1				Pitch(mm)69.850					
Gasket materialSoft Iron				LayoutTriangular					
Nozzle				Fin					
Inlet16#300				TypeExtruded					
Outlet24#300				MaterialAluminum					
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					
Tube				ASME Code, Sec. VIII, Div. 1					
MaterialSA-334 6				Customer Specifications					
Tube outside diameter(mm)25.400									
Min wall thickness(mm)1.651									
Mechanical Equipment									
Fan				RPM1500					
ManufacturerAxial Fans Int Srl (or equivalent)				Service factor					
No./Bay2				EnclosureExec / IP55					
RPM(Revs/min.)				Voltage400					
Diameter(ft)7				Phase3					
No. of blades				Cycle50					
Angle(degrees)				Fan noise level(dB)max 85					
Pitch adjustment100% Manual				Speed Reducer					
Blade material				TypeV- belt					
Hub material				Manufacturer					
@design temp(kW)				No./Bay2					
@min. ambient temp				Service factor					
Tip speed				Speed ratio					
Driver				Support					
Type				Vib. switchYES					
Manufacturer				Enclosure					
No./Bay									
Driver(kW)7.5									
Controls - Air Side									
Air recirculation				Louvers					
Degree control of outlet process temp.				Positioner					
(Max. Cooling),+/- /				Signal air pressure (bar)					
Action on control signal failure				From		To			
Fan pitch				From		To			
Louvers				Supply air pressure (bar)					
Actuator air supply				From		To			
Fan				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.									