

API 661 Air-Cooled Heat Exchanger - Specification Sheet



Total Qty Required 2

Job No.	_____	Item No.	_____	Air Cooler
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Date	February 27, 2024	Revision	_____	B01
Proposal No.	_____	Contract No.	_____	
Inquiry No.	_____	Order No.	_____	
		No. of Item	_____	1

Manufacturer	_____	Heat exchanged	(kW)	252.
Model no.	_____	Surface/Item-Finned tube	(m2)	1579.2
Customer	ENER Teknologi	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	No. _____
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	(bar) 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) 109.07
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 required Seal Weld + Heavy Expanded

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Design, Material, and Construction (continued)

Header (continued)

Slope / Split _____ 1% on last pass / No
 Plug material _____ SA 350 LF2 CL.1
 Gasket material _____ Soft Iron

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

No./Bundle		140
Length	(m)	6.096
Pitch	(mm)	69.850
Layout		Triangular
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

Manufacturer _____ Axial Fans Int Srl (or equivalent)
 No./Bay _____ 2
 RPM _____ (Revs/min.)
 Diameter _____ (ft) 7
 No. of blades _____
 Angle _____ (degrees)
 Pitch adjustment _____ 100% Manual
 Blade material _____
 Hub material _____
 @design temp _____ (kW)
 @min. ambient temp _____
 Tip speed _____

Driver

Type _____
 Manufacturer _____
 No./Bay _____
 Driver (1) _____ (kW) 7.5

RPM _____ 1500
 Service factor _____
 Enclosure _____ Exec / IP55
 Voltage _____ 400
 Phase _____ 3
 Cycle _____ 50
 Fan noise level _____ (dB) max 85

Speed Reducer

Type _____ V- belt
 Manufacturer _____
 No./Bay _____ 2
 Service factor _____
 Speed ratio _____
 Support _____
 Vib. switch _____ YES
 Enclosure _____

Controls - Air Side

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

Louvers _____
 Positioner _____
 Signal air pressure (bar)
 From _____ To _____
 From _____ To _____
 Supply air pressure (bar)
 From _____ To _____
 From _____ To _____

Shipping

Plot area (WxL) _____ (m) 2.65 x 6.4
 Bundle weight _____ (kg)
 Bay _____ (kg)

Total weight, Dry / Wet (Kg) _____ (Based On HTRI) 11,000 / 11,400
 Shipping _____ (kg)

1) STD. nominated power.