



API 661 Air-Cooled Heat Exchanger - Specification Sheet

Job No.	_____	Item No.	2101 (summer)
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Date	11/20/2024	V03	V04
Proposal No.	_____	Contract No.	_____
Inquiry No.	_____	Order No.	_____

Manufacturer	_____	Heat exchanged (MegaWatts)	0.3818
Model no.	_____	Surface/Item-Finned tube (m2)	668.71
Customer	PEDCO/NISOC	Bare tube (m2)	31.536
Plant location	BINAK Oilfield	MTD, Eff. (Deg. C)	29.1
Service	1st stage Gas Compression Cooler	Transfer rate-Finned (W/m2-K)	20.125
Type draft	INDUCED	Bare tube, service (W/m2-K)	426.74
Bay size (WxL) (m)	1.966 x 3.8	Bare tube, clean (W/m2-K)	478.5
No. of bays/Items	1		

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		Hydrocarbon	In		Out	
Total fluid entering (kg/hr)	8664	x1.1	Total flow rate (Liq/Vap) (kg/hr)	9530.4	9530.4	
Dew/bubble point (Deg. C)	/		Water/Steam (kg/hr)	/	0	
Latent heat (kJ/kg)			Noncondensables (kg/hr)		0	
Inlet pressure (barG)	17.9		Molecular Wt. (Vap/Non-cond)	/	/	
Pressure drop (All/Calc) (bar)	0.7 / 0.473		Density (Liq/Vap) (kg/m3)	14.197	17.141	
Velocity (Allow/Calc) (m/s)	/ 17.09		Specific heat (Liq/Vap) (kJ/kg-C)	2.2057	1.9724	
Inside fouling resistance (m2-K/W)	0.0002		Thermal cond. (Liq/Vap) (W/m-K)	0.0438	0.0336	
			Viscosity (Liq/Vap) (mN-s/m2)	0.0137	0.0117	
Temperature (Deg. C)	In	Out				
	129	60				

Performance Data - Air Side

Air inlet temperature (Deg. C)	50.26	Face velocity (m/s)	2.9
Air flow rate/item (m3/s)	24.446	Minimum design ambient temp. (Deg. C)	5
Mass velocity (kg/s-m2)	_____	Altitude (m)	12.5
Air outlet temperature (Deg. C)	65.15	Static pressure (Pa)	138.77
Air flow rate/fan (m3/s)	12.223		

Design, Material, and Construction

Design pressure (barG)	22	Heating Coil	NO
Test pressure (barG)	28.6	No. of tubes	_____
Design temperature (Deg. C)	155	Tube outside diameter (mm)	_____
Min. design metal temp. (Deg. C)	_____	Tube material	_____
Tube bundle		Fin material and type	_____
Size (WxL) (m)	1.922X 3.8	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	_____	Inlet pressure (barG)	_____
Pipe rack beams	_____	Pressure drop (All/Calc) (kPa)	/
Ladders, walkways, platforms	_____	Design temperature (Deg. C)	_____
Structure surface prep.	_____	Design pressure (barG)	_____
Header surface prep.	_____	Inlet/Outlet nozzle	/
Louver	YES	Header	
Material	_____	Type	Plug
Action control	Manual	Material	SA-240 TP316L
Action type	_____	Corrosion Allowance (mm)	0
		No. of passes	4



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Design, Material, and Construction (continued)

Header (continued)				No./Bundle	104
Slope	1% ON LAST PASS			Length (m)	3.8
Plug material	SA 182 F316L			Pitch (mm)	63.5
Gasket material	Solid metal			Layout	Triangular
Nozzle	No.	Size, (In)	Rating/Facing	Fin	
Inlet	1	6	300 RF	Type	Extruded
Outlet	1	6	300 RF	Material	Aluminum Alloy 1060 - O
Vent	1	2	300 RF	Thickness (mm)	0.48
Drain	1	2	300 RF	Selection temp. (C)	_____
Chemical Cleaning	_____	_____	_____	Outside diameter (mm)	57.15
Min. Wall Thk.	_____	_____	_____	Fin density (fin/meter)	400
Tube	SA-213 TP316L Tube (S) S31603			ASME Code, Sec. VIII, Div. 1	_____
Material	SA-213 TP316L Tube (S) S31603			Customer Specifications	_____
Tube outside diameter (mm)	25.4			_____	_____
wall thickness (mm)	1.651			_____	_____

Mechanical Equipment

Fan				RPM	1500
Manufacturer	_____			Service factor	1
No./Bay	2			Enclosure	EExd,IIB T3 (IP55)
RPM (Revs/min.)	626.4			Voltage	400
Diameter (mm)	1372			Phase	3
No. of blades	4			Cycle	50
Angle (degrees)	_____			Fan noise level (dB)	≤85
Pitch adjustment	50% Auto			Speed Reducer	
Blade material	AL			Type	V-BELT
Hub material	ALU/Steel			Manufacturer	_____
@design temp	2.6			No./Bay	2
@min. ambient temp	3.5			Service factor	1.8
Tip speed	_____			Speed ratio	_____
Driver	_____			Support	_____
Type	_____			Vib. Switch	YES,EExd,IIB T3 (IP65)
Manufacturer	_____			Enclosure	_____
No./Bay	2			_____	_____
Driver (kW)	5.5			_____	_____

Controls - Air Side

Air recirculation	NO			Louvers	_____
Degree control of outlet process temp. (Max. Cooling), +/-	_____ / _____			Positioner	_____
Action on control signal failure	_____			Signal air pressure (barG)	_____
Fan pitch	_____			From	To _____
Louvers	_____			From	To _____
Actuator air supply	_____			Supply air pressure (barG)	_____
Fan	_____			From	To _____
_____	_____			From	To _____

Shipping

Plot area (WxL) (m)	1.966 x 3.8			Total (kg)	9140.4
Bundle weight (kg)	2252.7			Shipping (kg)	_____
Bay	_____			_____	_____

Note: 1) Reported duty and flow rates include a user-specified multiplier of 1.10
 2-Max allowable nozzle load = 3xAPI
 3-Material will be meet requirements of NACE MR0175/ISO1516 and specification for material requirements in sour service (BK-GNRL-PEDCO-000-PI-SP-0008)
 4-HTRI Weight is reported