

AIR COOLED HEAT EXCHANGER
DATA SHEET (US CUSTOMARY UNITS)

JOB NO 20060534
PAGE 1 OF 3
DATE 01-22-07
PROPOSAL NO 3614 Rev.1
INQUIRY NO

TAG HAL 2310
BY RAF
REVISION 1
CONTRACT NO
ORDER NO

GENERAL INFORMATION																																
MANUFACTURE <u>Tek-Fins, Inc.</u> MODEL NO <u>2-1736T12.5</u> CUSTOMER <u>Kinder Morgan</u> PLANT LOCATION <u>Station 302</u> SERVICE <u>Compressor Aftercooler</u> TYPE DRAFT: ☐ INDUCED ☒ FORCED BAY SIZE (W x L), FT <u>17 x 36 (tubes)</u> NO OF BAYS / ITEM: <u>2</u>	HEAT EXCHANGED, BTU / H <u>9,760,000 x 1.10</u> SURFACE / ITEM--FINNED TUBE, FT ² <u>170,450</u> BARE TUBE, SQ FT <u>8,162</u> MTD EFF, %F <u>127.19</u> TRANSFER RATE, BTU / H - SQ FT-%F: FINNED <u>3.76</u> BARE TUBE <u>78.47</u> CLEAN <u> </u>																															
BASIC DESIGN DATA																																
PRESSURE DESIGN CODE <u>ASME VIII, Div I</u> TUBE BUNDLE CODE STAMPED ☒ Y ☐ N HEATING COIL CODE STAMPED ☐ Y ☐ N API 661 ☒ Y ☐ N	STRUCTURAL CODE <u>AISC</u> FLAMMABLE SERVICE ☒ Y ☐ N LETHAL/TOXIC SERVICE ☐ Y ☒ N																															
PERFORMANCE DATA--TUBE SIDE																																
FLUID NAME <u>Natural Gas (0.6 SG)</u> DEW / BUBBLE POINT, ° <u> </u> / <u> </u> ☐ POUR ☐ FREEZE PT, °F <u> </u> LATENT HEAT BTU/Lb <u> </u> INLET PRESSURE <u>932.3</u> ☒ psig ☐ psia PRESS DROP, (ALLOW / CALC), PSI <u>7.0 / 2.0</u> VEL, (ALLOW / CALC), FT / S <u> </u> / <u> </u> INSIDE FOUL RES, H - SQ FT-%F / BT <u> </u> / <u>0.001</u>	<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:60%;"></th> <th style="width:20%; text-align: center;">IN</th> <th style="width:20%; text-align: center;">OUT</th> </tr> </thead> <tbody> <tr><td>TOTAL FLOW, LB / H</td><td style="text-align: center;">790788</td><td style="text-align: center;">790788</td></tr> <tr><td>WATER/STEAM, LB / H</td><td style="text-align: center;">0</td><td style="text-align: center;"> </td></tr> <tr><td>NON-CONDENSABLE, LB / H</td><td style="text-align: center;">0</td><td style="text-align: center;"> </td></tr> <tr><td>REL MOLECULAR MASS (Vap/Non-con)</td><td style="text-align: center;"> </td><td style="text-align: center;"> </td></tr> <tr><td>THERMAL CONDUCTIVITY(liq/vap) BT</td><td style="text-align: center;">0.0251</td><td style="text-align: center;"> </td></tr> <tr><td>TEMPERATURE, RF</td><td style="text-align: center;">145</td><td style="text-align: center;">125</td></tr> <tr><td>DENSITY, LB / CU FT</td><td style="text-align: center;">2.784</td><td style="text-align: center;"> </td></tr> <tr><td>VISCOSITY, CP</td><td style="text-align: center;">0.014</td><td style="text-align: center;"> </td></tr> <tr><td>SPECIFIC HEAT, BTU / LB - °F</td><td style="text-align: center;">0.6175</td><td style="text-align: center;">Average</td></tr> </tbody> </table>			IN	OUT	TOTAL FLOW, LB / H	790788	790788	WATER/STEAM, LB / H	0		NON-CONDENSABLE, LB / H	0		REL MOLECULAR MASS (Vap/Non-con)			THERMAL CONDUCTIVITY(liq/vap) BT	0.0251		TEMPERATURE, RF	145	125	DENSITY, LB / CU FT	2.784		VISCOSITY, CP	0.014		SPECIFIC HEAT, BTU / LB - °F	0.6175	Average
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AIR INLET TEMP (DESIGN DRY BULB), ° <u>105</u> AIR OUTLET TEMP, °F <u>127.19</u> AIR FLOW RATE / ITEM (LB / H) (SCF 2,016,137 lb./hr. MASS VEL, (NET FREE AREA), LB / H - S' <u>3,390</u> AIR FLOW RATE / FAN, ACF <u>119,485</u>	FACE VELOCITY, FPM <u>370</u> SFPM MIN DESIGN AMBIENT TEMP, °F <u> </u> ALTITUDE, FT <u>0</u> STATIC PRESSURE, IN WATER <u>0.248</u>																															
DESIGN, MATERIALS, AND CONSTRUCTION																																
GENERAL DESIGN PRESSURE, PSIG <u>1300</u> TEST PRESSURE, PSIG <u>Per ASME VIII</u> DESIGN TEMPERATURE, °F <u>300</u> MIN DESIGN METAL TEMP, ° <u>-20</u> TUBE BUNDLE SIZE (W x L), FT <u>16.83 x 37.5</u> NO / BAY <u>One</u> NO OF TUBE ROWS <u>Five</u> BUNDLES IN PARALLEL <u>Two</u> SERIES <u>0</u> STRUCTURE MOUNTING: ☐ GRADE ☐ PIPE RACK ☒ RAISED DECK PIPE-RACK BEAMS DISTANCE (C-C) <u> </u> LADDERS, WALKWAYS, PLATFORMS: ☐ YES ☐ NO ☒ BY OTHERS STRUCTURE SURF PREP / COATING: <u>Galvanized</u> HEADER SURF PREP / COATING: <u>Metallized</u>	HEATING COIL NO OF TUBES <u>NA</u> O.D, IN <u> </u> TUBE MATERIAL <u> </u> FIN MATERIAL AND TYP <u> </u> THICKNESS, IN <u> </u> ASME CODE, SECTION VIII, DIVISION 1 STAMP? ☐ YES ☐ NO HEATING FLUID <u> </u> FLOW, LB / <u> </u> TEMPERATURE (IN / OUT), °F <u> </u> / <u> </u> INLET PRESSURE, PSIG <u> </u> PRESS DROP (ALLOW / CALC), PSI <u> </u> / <u> </u> DESIGN TEMP, °F / PRESS, PSIG <u> </u> / <u> </u> INLET / OUTLET NOZZLE, NPS <u> </u> / <u> </u> LOUVER MATERIAL <u>Aluminum w/ Hail</u> ACTION CONTROL: ☐ AUTO ☒ MANUAL ACTION TYPE: ☐ OPPOSED ☒ PARALLEL																															

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SPECIFICATION SHEET

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DESIGN, MATERIALS, AND CONSTRUCTION (CONTINUED)

HEADER (CONTINUED)

TYPE Box W/Plugs
MATERIAL SA 516-70
CORROSION ALLOWANCE, INCH 0.063
NO. OF PHASES 1
SLOPE, IN / FT 1/8 -single pass, 0-double pass
PLUG MATERIAL Steel
GASKET MATERIAL Stainless Filled.

NOZZLE

SIZES	Per Bundle	NO	SIZE, NPS	RATING AND FACING
INLET	2	10	600 RF	
OUTLET	2	10	600 RF	
VENT	1	1	600 RF	
DRAIN	1	1	600 RF	
TEMP IND				
PRESS IND				
OTHER				
CHEMICAL CLEANING				
MIN WALL THK, IN				

TUBE

MATERIAL SA 179 (SMLS)
OD, IN 1 MIN WALL THK, I.08; Note 7
NO / BUNDL 433 LENGTH, FT 36
PITCH, IN 2.3125
LAYOUT Triangular

FIN

TYPE L-Tension High Performance
MATERIAL 5005 marine Grade Aluminium
STOCK THK, IN 0.016
SELECTION TEMP, °
OD, IN 2.25 NO / IN 10
ASME CODE, SECTION VIII, DIVISION 1 STAMP?

☒ YES ☐ NO

CUSTOMER SPECIFICATIONS:

MECHANICAL EQUIPMENT

FAN

MFR AND MODE Moore 10000HD #42
NO / BAY 2 RPM 183
DIA, FT 12.5 NO OF BLADES 6
ANGLE 21.9
PITCH ADJUSTMEN ☒ MANUAL ☐ AUTO
BLADE MATERIAL Aluminium
HUB MATERIAL Aluminium
KW / FAN:
@ DES TEM 6.09 KW / 8.17 HP
@ MIN AMB
TIP SPEED, FPM: 7,186
MAX ALLOW
CALC

DRIVER

TYPE ELECTRIC MTR TEFC Class B Temp rise/F Insultn
MFR AND MODE Standard

NO / BAY Two DRIVER HP 10
RPM 870 SERVICE FACTOR 10%
ENCLOSURE TEFC
VOLT 480 PHASE 3 CYCLE 60
FAN NOISE LEVEL (ALLOW / CALC):
dB(A) 85 / 73.7 @ FT 3 Below

SPEED REDUCER

TYPE Poly V-Banded
MFR AND MODEL 3 VX
NO / BAY Two
SERVICE FACTOR 1.47 SPEED RATIO 4.75
SUPPORT: ☒ STRUCTURE ☐ PEDESTAL
VIB SWITCH: ☒ YES ☐ NO Note 3
ENCLOSURE Expanded Metal Guard

CONTROLS-AIR SIDE

AIR RECIRC ☐ NONE ☐ INTERNAL ☐ EXTERNAL
OVER ☐ SIDE ☐ END
DEGREE CONTROL OF OUTLET PROCESS TEMP:
(MAX COOLING), + / - ∞ /
ACTION ON CONTROL SIGNAL FAILURE
FAN PITCH: ☐ MIN ☐ MAX ☐ LOCKUP
LOUVERS: ☐ OPEN ☐ CLOSE ☐ LOCKUP
ACTUATOR AIR SUPPLY
FAN: ☐ NONE ☐ POSITIONE ☐ BIAS RELAY

LOUVERS: ☐ INLET ☐ OUTLET ☐ BYPASS
POSITIONER: ☐ YES ☐ NO
SIGNAL AIR PRESSURE, PSIG:
FROM TO
TO
SUPPLY AIR PRESSURE, PSIG:
MAX MIN
MAX MIN

SHIPPING

PLOT AREA (W x L), FT 35 x 38
BUNDLE WT, LB 38,800
BAY Two

TOTAL
SHIPPING, LB 54,500

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1	NOISE DATA	PURCHASER SPECIFICATION	PURCHASER SPECIFICATION	VENDOR GUARANTEE	VENDOR GUARANTEE
2	Octave bands centre	SPL at designated location	PWL per fan	SPL at designated location	PWL per fan
3	63				
4	125				
5	250				
6	500				
7	1000				
8	2000				
9	4000				
10	8000				
11	dB(A)				
12	Overall unit PWL				
13	dB(A)	See Proposal Letter			
14	Unless otherwise specified: SPL is the sound pressure level measured in dB, reference 2×10^{-5} N/m ² . PWL is the sound power level measured in dB, reference 1×10^{-12} W. For forced draft fans, the SPL is measured at the centerline of the fan 1m below the inlet of the fan. For induced draft fans the SPL is measured 1m below the bundles. Noise of equipment shall include noise from speed reducer and motor. The upper tolerance noise level is +0 dB(A). If total noise is present, then the specified noise level shall be interpreted as 5 dB(A) more.				
15	Description of designated location:				
16	Specification of special requirements (with/without acoustic measures, special low-noise fans):				
17					
18					
19					
20					

* VENDOR TO PROVIDE

MARIO_ARAIZA@KINDERMORGAN.COM

KINDER MORGAN

NEW CANEY, TX

DO# 616 5940 -STAT