DPH FOCUS

AIR COOLED EXCHANGER SPECIFICATION (SI)

DPH Focus

JOB NO. 9971

CLIENT NAME: Encana Integrated Oil Division

LOCATION: Foster Creek

REV	DESCRIPTION	DATE	BY	CHK'D	APPR'D
A	ISSUE FOR BID	Jan. 25, 2008	SJ	TS	
B	RE ISSUED FOR BID	Feb. 22, 2008	SJ	TS	
C	REVISION OF THERMAL COND.	May 7, 2008	SJ	TS	
0	ISSUED FOR PURCHASE	May 12, 2008	CA	DB	
1	RE ISSUED FOR PURCHASE	Oct 10, 2008	SJ	TS	
	AS BUILT	Oct 15, 2009	SJ		

TAG NO.: E-5888

PO NO.: 9971-4001C

SERVICE: Lean AGE Cooler

NO. UNITS: 1	TYPE: FORCED DRAFT	BAY WIDTH / LENGTH, m	3.48 / 11.28
SQ. m PER UNIT (BARE/FIN 176.2 / 3728.4	BAYS PER UNIT: ONE	BUNDLES PER BAY:	ONE
MANUFACTURER/MODEL: Exchanger Industries 1E1.42 38 10 2			

PERFORMANCE OF ONE (1) UNIT

OPERATING CONDITIONS:		TUBE SIDE		AIR SIDE			
FLUID CIRCULATED:		50 wt% Lean Amine (HS-102)		FLOW, kg/h	467,654	ALT., m	673
TOTAL FLOW - kg/h:		35,617	35,617	TEMP., deg C: IN	35.0	OUT	46.02
		INLET	OUTLET	MIN. TEMP., deg C	-40	STATIC P, kPa	
VAPOUR	- kg/h	-	-	MECHANICAL EQUIPMENT			
LIQUID	- kg/h	35,617	35,617	FAN MFR/MODEL	MOORE 1036 73U0A		
STEAM	- kg/h	-	-				
FLUID COND.	- kg/h	-	-	NO. PER BAY	2 (NOTE 3)	DIAMETER, m	3.05
WATER	- kg/h	-	-				
TOTAL	- kg/h	35,617	35,617	NO. BLADES	6	MATERIAL	AL
DENSITY Vapour/Liquid	kg/m^3	- / 1,022	- / 1,022	kW/FAN	12.31	HUB MATERIAL	
MOLECULAR WEIGHT	- Liquid	-	-	RPM	290	AUTO/MAN PITCH	MANUAL
	- Vapour	-	-	PITCH MIN/MAX W/AIR FAIL			
THERMAL COND. (V/L)	- W/m-K	- / 0.421	- / 0.372	DRIVER NO.	2		
LATENT HEAT	- kJ/kg	-	-	MFR	TECO	TYPE	
VISCOSITY - Liquid	- cP	1.62	4.00	kW EACH	22.37	RPM	1750
- Vapour	- cP	-	-	VOLTS/PH/HZ	600/3/60	ENCL.	TEFC
SPEC. HEAT Liquid	kJ/kg-°C	3.797	3.640	VAR. SPEED	YES		
Vapour	kJ/kg-°C	-	-				
OPERATING TEMP.	- deg C	78.9	43.3	SPEED REDUCER TYPE	V-BELT		
DEW POINT TEMP.	- deg C	-	-				
OPERATING PRESSURE	- kPa (ga)	80.0	11.2	MFR		MODEL	
ATMOS. PRESSURE	- kPa (abs)	93.0	93.0	AGMA RATING		RATIO	
PRESSURE DROP	- kPa	ALLOW: 70 (NOTE 10)	CALC: 68.81	SUPPORT TYPE			
FLUID VELOCITY	- M/S	0.94 / 0.94					
FOUL. FACTOR (TEMA)	m2°C/W	0.000352					
HEAT EXCHANGED DUTY	- kW	1,308		TRANS. RATE (W/m2 Deg C) (BARE/FINS)		- / 22.9	
LMTD (CORR./UNCORR.)	- deg C	- / 17.7		CLEAN		583.5	
HEAT RELEASE CURVE		LINEAR		SERVICE		469.8	

CONSTRUCTION

TUBE DESIGN PRESS.	kPa(ga)	345/VAC @ -45 / 149 °C		TUBES (per bundle)			
TEST PRESSURE	kPa(ga)	PER CODE					
SOUR SERVICE	YES (NOTE 8)	CORR/EROS. DUE TO	WET CO_2/H_2S	MATERIAL	SA-179	TYPE	
WIND LOAD, km/h	NOTE 4	MOUNTED (PR/GRADE)	GRADE	O.D. mm	25.4 mm	THK.	BWG 14 MIN
CODE	ASME SEC VIII DIV 1	PROV. OF	ALBERTA	No.	194	LENGTH, m	11.582
STAMP	YES	TEMA CLASS	R API 661	PITCH	60.33 (Transverse)		
OTHER SPECS:	NOTE 5			FIN TYPE	L-FINNED	MATERIAL	AL
TUBE BUNDLE (PER BAY)				FIN O.D., mm	57.15	THK., mm	0.41
SIZE, m	3.11 x 11.89	NO.	ONE	FIN PITCH. NO./cm	3.94		
NO. TUBE ROWS	4	FRAME		ACCESSORIES			
ARR'T: 1 PARALLEL BUNDLES	IN SERIES			BUG SCREEN	YES	HAIL SCREEN	YES
1 PARALLEL BAYS	IN SERIES			AUTO LOUVRES	NOTE 6	FAIL	NOTE 6
		HEADER		MANUAL LOUVRES	FRONT/SIDES	WINTERIZE	YES
TYPE	BOX	CORR. ALLOW., mm	6.4	TEMP. CONTROLLERS	NOTE 9	GALVANIZE	NO
MATERIAL: HEADER	SA-516-70N	PLUGS	SA-350-LF2 CL 1	RECIRCULATION TYPE	OVER END		
PIPE SA-333-6 FLANGES	SA-350-LF2 CL 1	GASKETS	C1010 / C1020	VIBRATION TRANSMITTER	YES	FAN GUARD	YES
NO. OF PASSES	6	SLOPE	YES 1%	HEAT COIL	YES (NOTE 7)		
PG / TG	YES	SR	YES			HANDRAIL	YES

CONN.	NO.	SIZE	RATING		SELF DRAINING	YES	LADDER	YES
INLET	1	4"	150# RF		TOP/BTM ACCESS	BTM	WALKWAY	YES
OUTLET	1	4"	150# RF		PREP SP-6 PRIME	NOTE 12	FINISH	NOTE 12
PG/TG	2 / 2	2"	150# RF		WT. kg: SHIP | HYDRO		BUNDLE	
HEAT COIL IN	1	2"	150# RF					
HEAT COIL OUT	1	2"	150# RF					

NOTES:

1. Deleted.
2. Provide 10% excess area, calculated by increasing the tubeside flow and overall duty by 10%. Incremental area should be based on increasing tube length.
3. Fans should be capable of providing 120% of required air flow for normal operation. A minimum of two (2) fans shall be installed.
4. 1/100, 0.44 kPa, 26 m/s.
5. The following specs shall apply:
   - TR-43-SPC-00-002-01
   - TR-43-SPC-00-032-01
   - TR-46-SPC-00-004-01
   - TR-43-SPC-00-019-01
   - TR-50-SPC-00-003-01
6. Manual louvres on front and sides. Auto (FC) on top, end (FC) and recirc (FO). Actuators fail to keep plenum hot.
7. Glycol/Water Weat Coil Design Pressure = 1379 kPag at 177°C. Operating Temperature = 149°C. Design Pressure Drop = 69 kPa.
8. NDE per Table 2, Class 2, TR-43-SPC-00-032-01. Wetted material shall comply with NACE MR 0175 (latest edition) and have a carbon equivalence less than or equal to 0.45%.
9. Vendor to provide cooler plenum temperature transmitter (Rosemount). Louvres (top, side and rear) shall be Fisher actuated c/w Fisher I/P transducers.
10. Allowable pressure drop is for fouled condition.
11. Fan deck height (height from grade to underside of fan) shall be 80% of fan diameter or 2132 mm, whichever is greater.
12. Primer shall be Epoxy Zinc Rich; Finish shall be 2 Coats Urethane substitute.