PROCESS DATA SHEET FOR LP CONDENSATE PUMPS

Tabulation of Revised Pages

SHEET	REVISIONS									SHEET	REVISIONS										
	B0	B1	B2	B3																	
1	X	X	X	X						51											
2	X	X	X	X						52											
3	X	X	X	X						53											
4	X	X	X							54											
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GENERAL DATA

Pump Type:	CENTRIFUGAL HORIZONTAL		Driver Type Operating/Spare:		Electric motor		
Operation:	Continuous ☑	Periodic ☐	Installation:		Indoor ☐	Outdoor ☑	
Number of Pumps:	2 @ 100 %	Pump Configuration:	1 Operating	Spare 1	Min. Turndown:	30% (1)	

PROCESS OPERATING DATA

Operating Case:	SUMMER	
Fluid Description:	LP CONDENSATE	
Normal Pumping Temperature, C:	105 (7)	
Maximum Expected Pumping Temperature, C:		
Normal/Minimum Rated Specific Gravity:	0,955/----	
Maximum Expected Specific Gravity:	----	
Maximum/Normal/Minimum Vapour Pressure, bara	----/ 1,2 /----	
Viscosity, cP:	0.265	
Maximum Required Capacity, Actual m3/h:	88.4	
Normal Capacity, Actual m3/h:	80.4	
Required Discharge Pressure, barg:	6.1	
Minimum Suction Pressure, barg:	----	
Normal Suction Pressure, barg:	0.7	
Maximum Possible Suction Pressure, barg:	4.2	
Differential Pressure, bar:	5.4	
Differential Head, m	58.0	
NPSH Available, m:	4.6	
Suspended solid (Type/Dimensions/Volume %) mm	N	
Dissolved Gas (Y/N)	N	
Corrosion or Erosion Due to:	-	
Reacceleration /Automatic Start-up (Y/N)	N/Y	
Start-up with Delivery valve (Open/Close)	OPEN	

ADDITIONAL PUMP DATA

Pump Design Pressure, barg:	11.0 *(5)*		Pump Design Temp., °C:	Min.: -1 °C	Max.: 130 °C
Flow Control:			Casing Material:	CS (2)	
Spare Pump Starting Method:	AUTOMATIC (Low flowrate)		Internals Material:	12% Cr (2)	
Pump Jacket Required:	Yes ☐	No ☑	Single seal type		
Contamination of liquid Handled Allowed	N		Hazardous agent / Flammable	Yes ☐	No ☑
Air Entrainment Allowed	N				
Leaks Allowed	***Y***				B3
Antifreezing protection	N				
Suction /Discharge Line Size (inch)			8"/6"		

NOTES

(1) TURNDOWN IS REFERRED TO NORMAL CAPACITY.

(2) API Class S-6

(3) Suction and discharge line rating is #150

(4) The pump efficiency has been taken 0.7 as a preliminary estimation. Calculated hydraulic power is 13,3 kW.

(5) Estimated pressure at shut-off (vendor to confirm)

(6) Deleted

deleted

(7) Personnel protection to be considered

$$NPSH_A = h_p - h_{vpa} + h_{st} - h_{fs} - h_a$$

where: hp - absolute pressure head in barg on the surface of the liquid supply level. = (0,2*100000)/(955*9.81)=2,1 m

hvpa - Vapor pressure of the condensate in barg =(0,2*100000)/(955*9.81)=2,1 m

hst - Static height in barg difference between liquid level and established pump datum pressure:
Difference between Vessel T.L. and ground = 7000 mm
Vessel LLL = 300 mm
Difference between pump centerline and the ground = 800 mm
hst=(7000+300-800)/1000= 6.5 m

hfs - All suction line losses including piping entrance losses and friction losses through the pipe, valves, fittings, permanent strainers where specified, etc. = (0.08*100000)/(955*9.81)= 0.9 m

ha - Acceleration head for reciprocating pumps only.

So NPSHa= (2,1) - (2,1) + (6.5) - (0.9) - (1.0) = 4.6 m