

CLIENT DELTA 0
P.O. NO.: PO-ENER-MME-2024-100-002
PROJECT: BOC
JOB NO.: MPE-007
SERVICE: PROPANE REFERIGERATION PACKA

NO.	BY	APP	DATE	DESCRIPTION
0	SES	IES	05/28/24	FOR APPROVAL

Control valve sizing to be updated based on below comments.

MME reply: Noted

GENERAL	1	Tag No.	2	Qty	3	Service / Line Size-Schedule	CHILLER EXPANSION LINE / 1.5"-SCH80 Inlet / 4"-SCH40 Outlet
	4	Line No. / Vessel No.	TBA	5	Function	LEVEL CONTROL VALVE	EXPANSION TYPE
BODY	6	Type of Body	UN-BALANCED PLUG	7	Body Size / Port Size / Travel	1" / 1" / 25.40 mm / 3/4" / 19.0 mm	
	8	Guiding / No. of Ports	STEM GUIDED WITH CONTOUR PLUG / 1	9	End Conn. & Rating	300# ANSI R.F. FLANGE	
	10	Body Material / Bolt-Nut	LOW TEMP SA350-LF2 / SA320-L7M / SA194-7M	11	Packing Type / Material	V-RING / PTFE	
	12	Lubricator / Isolating Valve	----	13	Bonnet Type	LOW TEMP SA352-LCB/LCC/GRAPHITE/316 SST GASKET	
	14	Trim Characteristic	REDUCED TRIM, LINEAR TRIM, UN-BALANCED, & PLUG DOWN	15	Trim Material : Seat/Plug Stem	316 SST / 316 SST HD	
	16	Required Seat Tightness	ANSI / FCI 70-2-1991 CL	17	Maximum Allow. Sound Level	82 dbA @ 3 ft	MME reply: client to explain reason for 1139 kg/hr min flow. This is level control valve and operate based on level inside chiller.
	18	Flow Direction (FTO or FTC)	FLOW TO OPEN	19	MFR / Model No. / Size (NOTE 14 & 17)	VSI / PISTON	/ 50
ACTUATOR	20	Type of Actuator / Service	SPRING OPPOSED DIA	21	Close at / Open at	6 PSIG / 30	G (AIR-TO-OPEN) BarG
	22	Flow Action to / Direction		23	Fail Position	AIR-TO-OPEN; FAIL-TO-CLOSE	
	24	Air Supply Pressure Nor /Max (NC)		25	Handwheel / Location		
	26	MFR / Model No. (NC)		27	Filter Reg. / Gauges / Bypass (NC)		
POSITIONER	28	MFR / Model No. (NC)		29	Filter Reg. / Gauges / Bypass (NC)		
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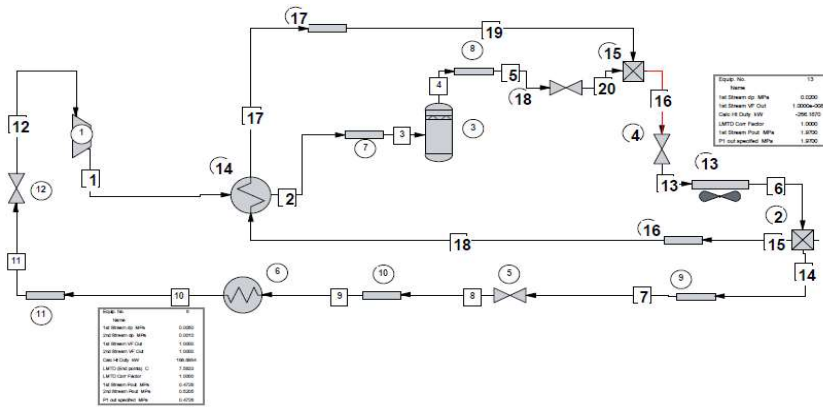
LEVEL				MME DOC.:	MPE-007	20502	A
CONTROL VALVE				CLIENT DOC.:			
NO.	BY	APP	DATE	DESCRIPTION			
0	SES	IES	05/28/24	FOR APPROVAL			

CLIENT DELTA 0
 P.O. NO.: PO-ENER-MME-2024-100-002
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A. SELECTED VALVE DATA

MAYEKAWA VALVE SIZING CALCULATION

HYSIS SIMULATION



Stream No.	7
Name	- - Overall - -
Molar flow kmol/h	64.5523
Mass flow kg/h	2846.5000
Temp C	56.3228
Pres MPa	1.9682
Vapor mole fraction	0.0000
Enth kW	-2089.8
Tc C	96.6700
Pc MPa	4.2496
Std. sp gr. wtr = 1	0.508
Std. sp gr. air = 1	1.523
Degree API	147.2079
Average mol wt	44.0960
Actual dens kg/m3	436.7512
Actual vol m3/h	6.5174
Std liq m3/h	5.6067
Std vap 0 C m3/h	1446.8534
- - Vapor only - -	
Molar flow kmol/h	64.5523
Mass flow kg/h	2846.5000
Average mol wt	44.0960
Actual dens kg/m3	436.7512
Actual vol m3/h	6.5174
Std liq m3/h	5.6067
Std vap 0 C m3/h	1446.8534
Cp kJ/kg-K	3.5933
Z factor	0.0730
Visc cP	0.06919
Th cond Btu/hr-ft-F	0.0439
- - Liquid only - -	
Molar flow kmol/h	64.5523
Mass flow kg/h	2846.5000
Average mol wt	44.0960
Actual dens kg/m3	436.7512
Actual vol m3/h	6.5174
Std liq m3/h	5.6067
Std vap 0 C m3/h	1446.8534
Cp kJ/kg-K	3.5933
Z factor	0.0730
Visc cP	0.06919
Th cond Btu/hr-ft-F	0.0439
Surf. tens. dyne/cm	3.5382

HYSIS SIZING

Control Valve Sizing for Stream # 7

Loadings and Properties

	Vapor	Liquid
Flow rate	0.0000 kg/h	2846.5000 kg/h
Flow rate	0.0000 m3/h	6.5174 m3/h
Density	0.0000 kg/m3	436.7512 kg/m3
Total flow	2846.5000 kg/h	
Upstream pressure	1.9682 MPa	
Downstream pressure	0.4860 MPa	
Critical flow factor	0.9800	
Corr. factor for reducers	1.0000	
Static head	0.0000 mm	
Seat type	Single-Seat	
Flow type	Two phase flow	
Calc. coefficient Cvc	1.6216	
Capacity coefficient Cv	9.0000	
Cvc / Cv ratio	0.1802	
Valve size	1.0000 in	

VENDOR RECOMMENDED VALVE SIZE 1"/ANSI/CL300 IS ACCEPTABLE.