



DP CLEAN: 0.2-0.3 BAR  
 DP DIRTY: 1 BAR

STREAM	
Vapour	
Temper	
Pressur	
Mass Fl	
Volume	
Heat Fl	
Compo	
MW	kg/kgmol
Cp	
Z Factor	
Density	kg/m3
Viscosity	cp

STREAM	Unit	1	2	3	4	5	6	7	8	30	31
Vapour Fraction		1.00	1.00	1.0000	1.0000	0.0000	0.0000	0.4308	1.0000	0.0000	0.0000
Temperature	C	-0.16	68.60	68.58	68.58	56.48	56.48	0.88	-0.01	15.20	5.00
Pressure	bara	4.65	20.29	20.28	20.28	19.76	19.76	4.72	5.00	5.00	4.80
Mass Flow	kg/h	2,808.00	6,010.20	2,808.00	2,808.00	2,808.00	2,808.00	2,808.00	2,808.00	40,600.00	40,600.00
Heat Flow	kW	-1,894.90	-1,832.00	-1,832.00	-1,832.00	-2,061.10	-2,061.10	-2,061.10	-1,894.00	-	-
Component(s)		PROPANE	PROPANE & OIL	PROPANE	PROPANE	PROPANE	PROPANE	PROPANE	PROPANE	STYRENE IN	STYRENE OUT
MW	kg/kgmol	44.096	-	44.096	44.096	44.096	44.096	44.096	44.096	-	-
Cp/Cv		1.2189	-	1.3823	-	-	-	-	-	-	-
Z Factor		0.8951	-	0.7256	-	-	-	-	-	-	-
Density	kg/m3	10.11	-	43.38	43.38	436.70	436.70	-	10.27	909.60	918.00
Viscosity	cp	0.0078	-	0.0106	0.0106	0.0690	0.0590	-	0.0078	0.820	0.960

Inlet nozzle size is 6". is it acceptable to use reducer to change to 6"?

New Comment: Please recheck capacity control as no need to control below 30%

New Comment: Please specify oil separator inlet nozzle size

MME: 6" inlet seems on higher size, verify with Condenser vendor  
 Ener Reply: Noted. 4" could be possible. in case of different size with line, reducer will be used.

outlet size is 4". is it acceptable to use reducer to change to 6"?

MME: Yes can be done  
 Ener Reply: Noted.

Please use Kettle reboiler without drum  
 MME: Noted

outlet size is 4" and quantity of nozzles is 2. is it acceptable to use reducer to change to 1.5"?

MME: Line size is correct. Verify with Condenser vendor.  
 Ener Reply: Noted. 2" could be possible in case of different size with line, reducer will be used.

Please recheck necessity of recycle valve as we have 30~100% capacity control. Please advise if by pass valve is needed or not. and advise if this valve could be manual (this is preferable).

MME: Compressor do have 30-100% capacity control. Ener to inform requirement and client agreement for below 30%.  
 Ener Reply: No need to capacity control less than 30%. this package will be in operation every 15 days. so please check if manual valve or globe valve or SOV (we prefer manual valve and could describe in operation manual) could be used instead of PCV for start up.

Please recheck necessity of receiver. receiver is not available in client PID. IF MME advise to use, please specify the size

MME: Receiver sizing by ENER. Receiver required however to be decided by ENER.  
 Ener Reply: Please delete receiver as it is not included in client material requisition. in PID we will use a pipe header. Just if MME advise technically this receiver is needed, we can keep it, if not a pipe header will be considered in PID and not needed to shown in PFD

there is one 6" nozzle at inlet as per HTRI design. if you advise to use 2 inlet nozzles 3", please let us know.

- NOTES:
- 1 Pump assembly supplied by MAYEKAWA includes the regulator
  - 2 Recycle is required to control compressor capacity at minimum load
  - 3 For operation P and T, refer to Table

this is inlet process line  
 MME: Noted

this is outlet process line  
 MME: Noted

MME: Follow HTRI. After expansion valve line size to be changed to 4" Single connection.  
 Ener Reply: Noted. so chiller inlet nozzle will be kept as 6". please show line size when it changes.

Comp. Oil Flow: 53.2 Lpm  
 14.1 GPM

Client: ENER TEKNOLOJI  
 P. O. No.: PO-ENER-MME-2024-100-002  
 Project: DELTA  
 Service: REFRIGERATION PACKAGE  
 Location: IRAQ  
 Job No.: MPG009  
 Unit Item Number: 0  
 Compressor Model: 250LUD-L  
 Refrigerant: PROPYLENE

0	3/7/2024	Issued for Approval
REVISION	DATE	DESCRIPTION
BY:		
Vendor 2		
APP		PFD
Vendor 1		
DATE:	DWG:	REV
3/7/2024	MPG009-20085	0