(Process Data Sheet For
Ethylene Pumps (70-P-7271 A/B/S)

Contract No:

Project: Dehloran Olefin Plant

Ownet: Dehloran Petrochemical Company (DPC)

Site: Dehloran Petrochemical Site

Rev.	DATE (DD.MM.YY)	PURPOSE OF ISSUE	PREPARED	CHECKED	APPROVED	AUTHORIZED
05						
04						
03						
02						
01	04.02.2019	Issued For Approval	M. Ghasemzadeh	M.Mirsadeghi	H. Rayhani	A. Nouri
00	30.12.2018	Issued For Approval	H.Farahbakhsh	M.Mirsadeghi	H. Rayhani	A. Nouri

REVISION INDEX

Page	Rev. 00	Rev. 01	Rev. 02	Rev. 03	Rev. 04	Rev. 05
1	✓	✓				
2	✓	✓				
3	✓	✓				
4	✓	✓				
5	✓	✓				
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Page	Rev. 00	Rev. 01	Rev. 02	Rev. 03	Rev. 04	Rev. 05
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						

1	Note										Rev
2		GENERAL DATA									
3		Type	CENTRIFUGAL								
4		No. of Main/Stand By Units	2 / 1								
5		Centrifugal Type	VERTICAL								
6		Positive displacement Type									
7		Item	70-P-7271 A/B/S								
8		Service	Ethylene Pump			Installation	Other		(SUBMERGE)		(Note 2)
9		Operation	Continuous			Parallel					
10		Type of Driver	Motor	No. of Motor / Engine / Steam Turbine / Gas Turbine Driven:	3 / / /						
11		CHARACTERISTICS OF HANDLED LIQUID									
12		Type of Handled Liquid					Ethylene				
13		Pumping Temp. (Min. / Normal / Max.)	C		/ / -103.30						
14		Density at Min. / Norm / Max. Temp.	kg/m3		/ / 566.00						
15		Viscosity At Min. / Normal / Max. Temp.	cP		/ / 0.17						
16		Specific Heat	Kj/KgK		2.48						
17		Vapour Pressure at Max. Pumping Temp.	Bar(a)		1.05						
18		Freezing Point / Pour Point	C		- / -						
19		Dissolved Gas	Yes-No		No						
20		Corrosive / Erosive / Hazard. Agents / Flammable/Other	Yes-No	No	No	Yes	Yes				
21		Corrosion / Erosion Caused by			-						
22		Chloride Concentration / H2S Concentration	mm		- / -						
23		Suspended solids (Type / Dimen. / Vol.%)	mm		- / - / -						
24		OPERATING CONDITIONS									
25		Suction Pressure (Min. / Normal / Max.)	Bar(g)		/ 0.12 (Note 13) / 1.1						
26		Discharge Pressure at Rated Capacity	Bar(g)		51.20						
27		Differential Pressure at Rated Capacity	Bar		51.08						
28		Capacity (Min. / Normal / Rated)	m3/h	21.00	/ 69.40		/ 76.30 (Note 3)				
29		Head at Rated Capacity	m		920.10						
30		NPSH Available	m		(Note 2)						
31		Max Allowable Pressure at Shut-Off	Bar(g)		62.40 ((Note 8)						
32		Hydraulic Power	kW		108.40						
33		Reacceleration / Automatic Start-Up	Yes-No		No / Yes						
32		Start-Up with Delivery Valve / Flow Controlled By		Open-Valve	/ Pressure Controller						
33		Vertical									
34		Minimum Liquid Level from Bottom of Sump	mm								
35		Sump Depth	mm								
36		Positive Displacement									
37		Flow Control Required / Mode / Type / Method		/ / /							
38		Pulsation dampeners at suction and discharge	Yes-No								
39		Calibration Pot Required	Yes-No								
40		Residual Pulsation on Discharge									
41		Relief Valve Setting	barg								
42		DESIGN CONDITIONS									
43		Design Temperature: Min / Max	C		-104 / 55						
44		Design Pressure	Bar(g)		62.4						
45		MECHANICAL DATA									
46		Contamination of Liquid Handled Allowed	Yes-No		NA						
47		Air Entrainment Allowed / Leaks Allowed	Yes-No		NA / NA						
##		Antifreezing Protection	Yes-No		NA						
##		Suction Line: Diameter / Rating	in		NA / NA						
##		Discharge Line: Diameter / Rating	in		6 /						
##		Mat. in Contact with Liq. Handled (Min.)			A-8						
##		Casing Corrosion Allowance	mm								

1	Note											Rev
2		PUMP DRIVER DATA										
3		Type of Driver		Motor								
4		STEAM TURBINE										
5		Type				Total No. of Req.						
6		Steam Charachteristics	Estimated Flow Rate		kg/h	Pressure		Bar(a)	Temperature		C	
7			Min.	Normal	Max.	Min.	Normal	Max.	Min.	Normal	Max.	
8		Inlet										
9		Exhaust										
10		Induction										
11		Extraction										
12		Relief Valve Setting	Bar	Inlet:			Extraction:			Other:		
13		Absorbed Power	kW	Normal			Rated			Other:		
14		GAS ENGINE-GAS TURBINE										
15		Fuel Gas Characteristics										
16		Molecular Weight		Kg/Kgmol								
17		Net Heating Value		kJ/kg								
18		Gross Heating Value		kJ/kg								
19		Operating Temperature (Min./ Normal / Max.)		C		/		/				
20		Operating Pressure (Min./ Normal / Max.)		Bar(g)		/		/				
21		Design Temperature		C								
22		Design Pressure		Bar(g)								
23		DIESEL ENGINE										
24		Fuel Oil Characteristics										
25		Supply Pressure (Min./ Normal / Max.)		Bar(g)		/		/				
26		Return Pressure (Min./ Normal / Max.)		Bar(g)		/		/				
27		Temperature (Min./ Normal / Max.)		C		/		/				
28		Net Heating Value		kJ/kg								
29		Design Temperature		C								
30		Design Pressure		Bar(g)								
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												

Note		Rev
	NOTES	
	1) The fluid is at boiling point. 2) Submerged pump type to be located in tank 70-TK-7201. NPSHA to be advised by pump vendor. 3) Design (rated) flow rates is 110 % of normal flow rate of base case. Pump Min. Flow is 30 % of normal flow rate of base case. 4) For Detail refer to PID No.: 70-BD-PR-PID-7203. 5) For site condition refer to Doc. No.: 10-BD-00-PR-SPC-0001. 6) Estimated effciency is 65 % and Estimated shaft power is 166.8 KW. 7) Pump hydraulic calculation based on Case 28 (Off Spec C2H4 Filling). 8) Pump shut-off has been calculated based on 1.2 x differential pressure + Max suction pressure, this figure shall be rechecked during detail design based on vendor data. 9) Deleted. 10) Deleted. 11) Deleted. 12) Deleted. 13) Estimated. Minimum pumping level at full rate to be guarnteed by vendor.	