

	Client: Brahmaputra Cracker and Polymer Limited Project: Brahmaputra Petroch. Compl. Project – 60 KTA PP Plant	
	Technical Specification	
	Powder Return Eductor 118-JB-310	
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POLYPROPYLENE PLANT

TECHNICAL SPECIFICATION

FOR

118-JB-310

POWDER RETURN EDUCTOR

This specification is confidential.

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0	29.06.09	For BEDP	GEL		CB		ME	
Rev.	Date	Revision Description	Init.	Sign.	Init.	Sign.	Init.	Sign.
			Prepared		Checked		Approved	

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6	NOTES FOR VENDOR

Remarks:

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DESIGN DATA								
1	Service		Removal of PP powder from Recycle Gas Cyclone and return to PP Reactor (1)					
2								
3	Type		Ejector					
4								
5								
6	Fluid Characteristics							
7	Fluid handled		Recycle gas (2)					
8	Corrosive		Yes		Phase		Vapor	
9	Toxic		No		Solids present		No	
10	Flammable		Yes		Hydrocarbons		Solidification point °C	
11	Hazardous in air		Yes		Flammable		Gas present	
12								
13								
14	Operating Conditions							
15	Description of inlet/outlet							
16	Fluid							
17	Operating temperature:		minimum	°C				
18			normal	°C	50 (2)			
19			maximum	°C				
20	Operating pressure:		minimum	kg/cm²g				
21			normal	kg/cm²g	28.5 (2)			
22			maximum	kg/cm²g				
23	Solid							
24	Flow rate design		kg/h		10			
25	Density (at normal operation P and T)		kg/m³					
26	Vapor / Gas							
27	Flow rate		kg/h		(2)			
28	Molecular weight		g/mol					
29	Density (at normal operation P and T)		kg/m³		(2)			
30	Atm. boiling point/flash point (cl. cup)		°C					
31								
32	(Basic) Material of Construction				(Min.) Mechanical Design Conditions			
33	Shell and heads		SS		Description		Design Press.	
34	Clad/liner						kg/cm²	
35	Internals				Casing		40 / -1	
36	Trays				Jacket		-48 / 160	
37	Jacket							
38	Demister							
39	Corrosion allowance mm		Nil					
40								
41	Construction Data				Heating / Cooling			
42	Position		Vertical		Heating medium			
43	Transitions piece				Cooling medium			
44	Length	mm	approx. 950 (4)		Electrical trace heating			
45	Eductor				Insulation (type / thickness)		Conservation (3)	
46	Length	mm	780 (4)					
47	Nozzle diameter	mm	20 (see sketch)		Miscellaneous			
48								
49								
50	Remarks:							
51	(1) See special note 1, page 6							
52	(2) See special note 2, page 6							
53	(3) Transition piece only.							
54	(4) To be confirmed by vendor.							
55								



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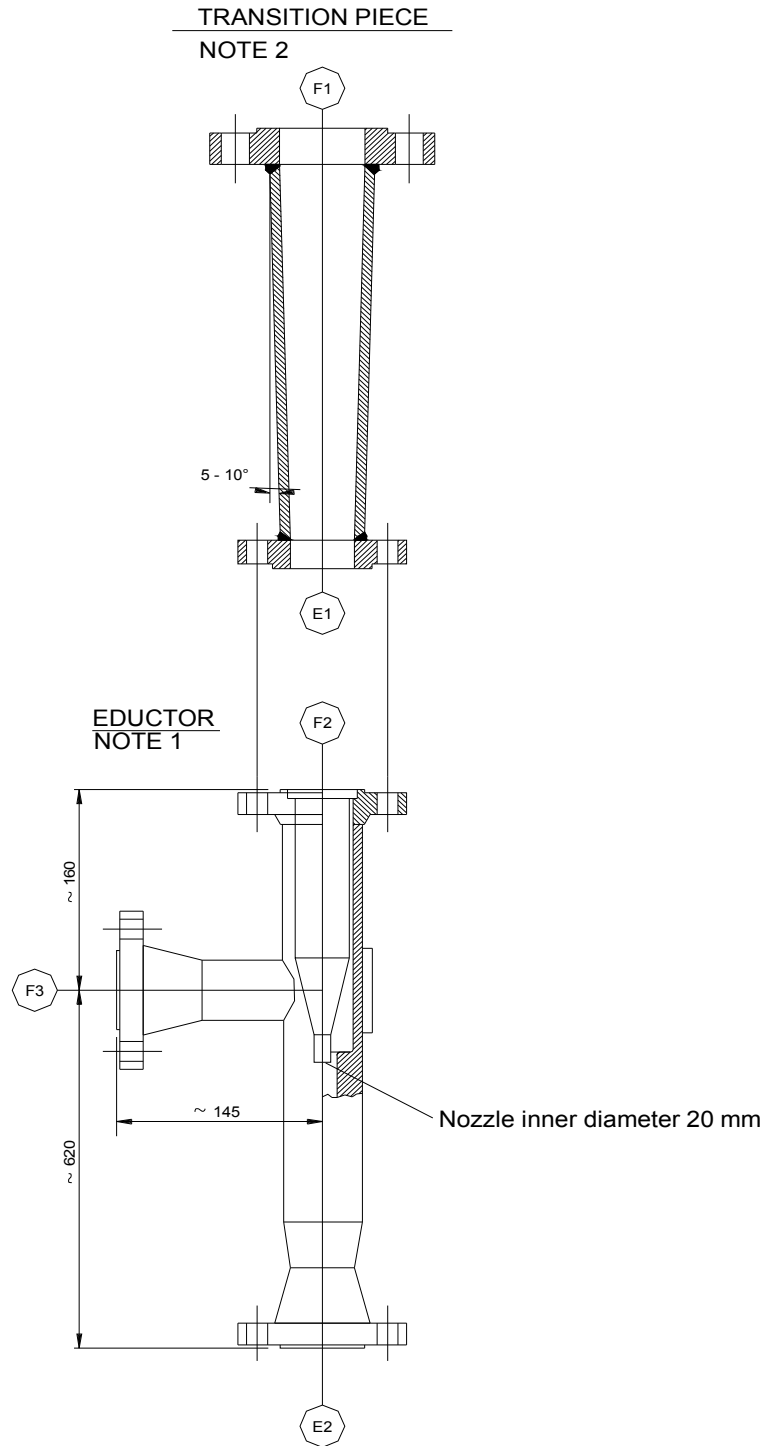
NOZZLE LIST

1	Nozzle ID	No. req.	Size inch	Rating min. #	Flange type	Designation	Remarks
2							
3							
4							
5							
6	E1	1	2 1/2	300	RF	Outlet to Eductor	(Transition piece)
7	E2	1	2 1/2	600	RF	Outlet to Polymerization reactor	(1)
8	F1	1	8	300	RF	Feed from RG Cyclone	(Transition piece)
9	F2	1	2 1/2	300	RF	Powder inlet from transition piece	
10	F3	1	2 1/2	600	RF	Motive inlet from recycle pump	(1)
11							
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49	Remarks:						
50	(1) Vendor to provide counter flange.						
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52							
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Technical Specification

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SKETCH



- | | |
|---|---|
| 1 | Remarks: |
| 2 | (1) Final dimensions to be confirmed by vendor. |
| 3 | (2) DEC may consider the construction of the transition piece from pipe elements. |
| 4 | (3) All internal welds to be ground flush. |
| 5 | |
| 6 | |
| 7 | |

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NOTES FOR VENDOR				
1	GENERAL NOTES:			
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17	Special Notes			
18				
19	(1) The powder eductor is utilized to remove powder from the recycle gas cyclone and return it to the			
20	PP reactor in a continuous manner. The powder eductor is essentially the reverse of a conventional			
21	eductor (see sketch). Powder plus recycle gas are removed from the cyclone by entrainment with			
22	the motive liquid propylene. The liquid propylene is supplied from the recycle gas pumps and is			
23	injected into the annular space between the nozzle and the eductor body thereby raising the pressure			
24	of the powder stream to above reactor pressure.			
25				
26				
27				
28				
29				
30	(2) PROCESS DATA:			
31	Description	POWDER/GAS INLET	MOTIVE INLET	OUTLET
32	Nozzle	F2	F3	E2
33	Phase (V=vapor, L=liq, P=powder)	V+P	L	V+L+P
34	Flow, kg/h	200 (V) + 10 (P) (*)	8300 (*)	8510 (*)
35	Density, kg/m ³	57 - 67	449	mix
36	Density solid, kg/m ³	910 - 940		
37	Pressure, kg/cm ² g	30	32.5	30.5
38	Temp, C	75	48	50
39	(**) Design flow for powder: 10 kg/h. Gas and motive flow in accordance with final design by vendor.			
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