

00	13-03-2020	Fresh Release	-sd-	-sd-
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REV	DATE	DESCRIPTION	Prepared	Checked & Approved

1.0 TECHNICAL INFORMATION

Sl. No.	Description	Requirement	
1.	End Customer	NTPC Limited	
2.	Project Name	Patratu Super Thermal Power Station Expansion Phase-I 3x800 MW	
3.	Location	Patratu, Ramgarh District, Jharkhand	
4.	Type	Three stage chevron type (First Stage shall be Flat or Roof Type, Second and Third stages shall be Diamond/Roof type)	
5.	Quantity		
i.	Quantity of Mist Eliminators for Unit-1,2,3	3 sets (1 set for each unit) 1 set means Complete Mist Eliminators, Washing systems and accessories.	
6.	MOC		
i.	ME Panel	Polysulfone (Or) Super austenitic stainless steel (254 SMO)	
ii.	Washing Pipe	FRP with corrosion and erosion resistant in the inner and outer side (Silicon Carbide coating on FRP surface exposed to slurry)	
iii.	Wash Pipe Supports	Shall be lined with min 2mm thk Alloy 59/C276 or entire Material in Alloy 59/C276	
iv.	Washing Nozzles	PVDF or PP as per bidder's proven practice	
v.	Hardware inside absorber	a) Alloy 59/ C276 for load bearing applications b) All metallic fasteners provided shall be of Alloy 59/C276 c) For pipe clamps, C276 Bolt, C276 Nut, C276 washer and C276 spring washer to be provided	
vi.	Enclosure Plate	Same as that of ME Panel if it is part of Mist Eliminator (or) C276 material.	
7.	Parameters		
i.	Gas flow	Vertical	
ii.	Casing Dimension	Length : 9900 mm	Width : 31900 mm
iii.	Design Pressure of Mist Eliminator Panel	660 mmH ₂ O (G)	
iv.	Max Allowable Pressure drop across Mist Eliminator element	20 mmH ₂ O (G) at Design point	
v.	Design Temperature	• 70 Deg C (Continuous) • 80 – 90 Deg C (30 minutes) • 90 – 100 Deg C (5 min)	

Sl. No.	Description	Requirement	
8.	Gas condition at ME Inlet	Guarantee Point	Design Point
i.	Gas Flow Rate (Nm ³ /s-wet)	943	1034
ii.	Gas Flow Rate (m ³ /s-wet)	1143	1261
iii.	Gas Temperature (Deg C)	58.1	62.1
iv.	Density (kg/m ³)	1.03149	1.00296
v.	Operating Pressure at Mist Eliminator inlet (mm H ₂ O (G))	47	60
vi.	Gas Flow Distribution	+ or - 20%	
9.	Gas Composition at ME Inlet		
i.	SO ₂ (Vol%-wet)	0.0021	0.0023
ii.	H ₂ O (Vol%-wet)	17.80	21.45
iii.	O ₂ (Vol%-wet)	5.91	5.65
iv.	CO ₂ (Vol%-wet)	9.67	9.25
v.	N ₂ (Vol%-wet)	66.61	63.66
vi.	HCl (ppm-wet)	<3	<3
vii.	HF (ppm-wet)	<1	<1
viii.	Dust (mg/Nm ³ -wet)	<50	<200
10.	Gypsum Slurry Density (t/m3)	1.176	1.177
11.	Entrained Mist Condition:		
i.	Mist Concentration at Inlet –at Guarantee & Design Point	200 g/Nm ³ -dry	
ii.	Mist Concentration at Outlet –at Guarantee & Design Point	≤20 mg/Nm ³	
12.	Mist Composition		
i.	Solid	25 wt. %	
ii.	Cl ⁻	21950 ppm	
iii.	Mg ²⁺	4330 ppm	
iv.	Ca ²⁺	5790 ppm	
v.	Na ⁺	240 ppm	
vi.	SO ₄ ²⁻	1450 ppm	

1.1 WASHING ARRANGEMENT

I.	Washing water condition	
a.	Flow rate - Average	40 m ³ /hr *1)
b.	Flow rate at M/E Inlet – Instantaneous Allowable Max	120 m ³ /hr
c.	Flow rate at M/E Inlet – Instantaneous Min	100 m ³ /hr
d.	Feed Pressure (at inlet flange of ME Wash header)	0.2 MPa (Max)
e.	Spray Nozzle –Top washing	90 °, Full Cone
f.	Spray Nozzle –Bottom washing	120 °, Full Cone
g.	Spray pipe level from ME Panel	< 700 mm

II.	Washing Method						
		First Stage		Second Stage		Third Stage	
		Front Surface	Back Surface	Front Surface	Back Surface	Front Surface	Back Surface
a.	Total Washing Area m ²	9.9 x 31.9	9.9 x 31.9	9.9 x 31.9	9.9 x 31.9	9.9 x 31.9	9.9 x 31.9
b.	Washing Water Source	Refer Clause 1.2					
c.	Washing Water Average Flow rate m ³ /h	*	*	*	*	*	**
d.	Instantaneous Max Water Flow rate m ³ /h	*	*	*	*	*	**
e.	Duration of One washing for One Divided Section Sec	*	*	*	*	*	**
f.	Time of One washing Cycle (min)	*	*	*	*	*	**
*Washing method shall be confirmed by the vendor. ** Only for Maintenance *1) shall be finalized by vendor							

1.2 WATER ANALYSIS

Process water is envisaged for Mist Eliminator washing. Process water analysis is provided below:

S.no	Constituents	Unit	PROCESS WATER
1.	Calcium as CaCO ₃	ppm	105
2.	Magnesium as CaCO ₃	ppm	81
3.	Sodium as CaCO ₃	ppm	70
4.	Potassium as CaCO ₃	ppm	7
5.	Iron as fe	ppm	0.5
6.	Total alkalinity as CaCO ₃	ppm	180
7.	Chlorides as CaCO ₃	ppm	60
8.	Sulphate as CaCO ₃	ppm	23
9.	Silica	ppm	17
10.	pH	-	7.0-7.8
11.	Turbidity	NTU	10

1.3 MIST ELIMINATOR ARRANGMENT AND MIST PARTICLE SIZE DISTRIBUTION:

- a) Bidder shall note that there are two column tie beams located inside the absorber and separated by 11058mm. Beams are located on either side of centre line at a distance of 5529 mm from the centre line (Bidder shall refer to Note 01 :B in the typical drawing enclosed). These two tie beams have to be used as Mist Eliminator beams.
- b) Overall wash arrangement shall be as per the drawing (typical) enclosed:

The Mist Particle Size Distribution shall be as per below fig

Fig. 2 Mist Particle Size Distribution(EXPECTED VALUE)



