ANNEXURE- I : TECHNICAL DATA SHEET

A – SITE CONDITION

Barometric Pressure …… 736 mmHg.

B – TECHNICAL PARMETERS OF FLUE GAS & FGTR UNIT AND DATASHEET FOR WASH NOZZLES -

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| 1) | Medium handled | Flue Gas – Analysis ( % by Volume, wet) : CO2 – 9.9 ; O2 – 6.08 ; N2-66.69 ; Moisture – 17.33 (Saturated).;; Flue Gas with dust concentration of 60 mg/Nm3 and SOx level- 392 to 1246 mg/Nm3 (wet basis) |
| Flue gas shall be saturated with 10% H2SO4 SOLUTION. |
| 2) | Operating Temp at inlet , Deg C | 53 |
| 3) | Operating Pressure at inlet, mmwc | 290 |
| 4) | Flow, Nm3/hr | 4,01,991 |
| 5) | FGTR Unit type | Outdoor, Vertical Tower type with Wet Stack at top portion |
| 6) | FGTR dimension , W X B X H – in meters | 9.634 x 9.144 x 20.88 |
| 7) | Module Dimensions , W X B X H, mm x mm x mm | 627 x648 x 337 |
| 7a) | Maximum Number of Modules stacked one above other | 5 Nos. |
| 8) | Number of Modules in each layer | 15 x 11 = 165 Nos. |
| 8a) | Purpose of Wash Nozzles | Washing of Modules so that dirt deposit on the surface is dislodged off. |
| 8b) | Arrangement of Wash Nozzles | Top Wash – Nozzles are at top of Modules with spray cone directed downwards.  Bottom Wash – Nozzles are at bottom of Modules with spray cone directed upwards. |
| 9) | No. of layers with Top Wash only | 5 Nos. |
| 10) | No. of layers with Bottom Wash also | 1 No. ( The bottom module layer has both Top and Bottom wash ) |
| 11) | No. of Wash Nozzles per Module | 1 No. |
| 12) | Total Number of Wash Nozzles per layer | 165 Nos. |
| 13) | Total Number of Top Wash Nozzles | 165 x 5 = 825 Nos |
| 14) | Total Number of Bottom Wash Nozzles | 165 x 1 = 165 Nos |
| 14 a) | Liquid to be sprayed through Wash Nozzles | 10% H2SO4 SOLUTION to be continuously circulated. |
| 15) | Wash Nozzle Model | BETE MP 156W , Bidder to indicate |
| 16) | Wash Nozzle Capacity | 0.66 m3/hr ( 11 LPM ) , Bidder to indicate |
| 16a) | Number of Wash Nozzles working at a time | 11 x 6 = 66 Nos. |
| 16b) | Total flow for number of working nozzles , m3/hr | 66 x 0.66 m3/hr = 43.56 m3/hr |
| 17) | Nozzle upstream pressure required, | 1.5 bar g , Bidder to indicate |
| 18) | Nozzle spray angle, degree | Preferred 90 degree cone ; Bidder to indicate . |
| 19) | Nozzle orifice dia, mm | Bidder to indicate |
| 20) | Nozzle coverage dia, mm at height, mm | Bidder to indicate ;(Each Nozzle to cover One module) |
| 21) | Each nozzle coverage cone dia considered , mm | Bidder to indicate |
| 22) | Droplet size | Bidder to indicate |
| 23) | Nozzle datasheet | Bidder to indicate |
| 24) | Nozzle height with respect to top surface of module,mm | Bidder to indicate |
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C – TECHNICAL DATASHEET OF MISTING NOZZLES -

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| 1) | FGTR Details | **AS PER ABOVE DATASHEET** |
| 2) | No. of layers with Misting Nozzles | 4 nos. |
| 3) | Misting Nozzle arrangement | Along the Flow with Spray Cone facing up |
| 4) | FGTR Sectional Area ,mtr x mtr | 9.634 x 9.144 |
| 5) | Total Number of Misting Nozzles per layer | 110 Nos |
| 6) | Total Number of Misting Nozzles | 110 x 4 = 440 Nos |
| 6a) | Purpose of Misting Nozzles | To generate Mist and maintain saturation of the Flue Gas |
| 6b) | Liquid to be sprayed through Misting Nozzles | 10% H2SO4 SOLUTION to be continuously circulated. |
| 7) | Misting Nozzle Model | BETE L66 , Bidder to indicate |
| 8) | Misting Nozzle Capacity | 0.145 m3/hr ( 2.42 LPM ) , Bidder to indicate |
| 8a) | Number of Misting Nozzles working at a time | 110 x 2 = 220 Nos. |
| 8b) | Total flow for number of working nozzles , m3/hr | 220 x 0.145 m3/hr = 31.9 m3/hr |
| 9) | Nozzle upstream pressure required, | 2.0 bar g , Bidder to indicate |
| 10) | Nozzle spray angle, degree | Preferred 90 degree cone ; Bidder to indicate . |
| 11) | Nozzle orifice dia, mm | Bidder to indicate |
| 12) | Nozzle coverage dia, mm at height, mm | Bidder to indicate ; Complete section of FGTR shall be well covered and the coverage dia of each nozzle shall have overlapping with adjacent nozzle coverage dia. |
| 13) | Each nozzle coverage cone dia considered , mm | Bidder to indicate |
| 14) | Droplet size | Bidder to indicate |
| 15) | Nozzle datasheet | Bidder to indicate |
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D – TECHNICAL DATASHEET OF MAKE UP WATER NOZZLES

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| 1) | FGTR Details | **AS PER ABOVE DATASHEET** |
| 2) | No. of layers with Make Up water Nozzles | 1 nos. |
| 3) | Make Up water Nozzles arrangement | Along the Flow with Spray Cone facing down |
| 4) | Make up water quantity , | 1.63 m3/hr |
| 5) | Total Number of Make Up water Nozzles | Bidder To indicate |
| 6) | Make up Water quality | Filter Water |
| 7) | Make up water Nozzle Model | Bidder to indicate |
| 8) | Make up water Nozzle Capacity | Bidder to indicate |
| 9) | Nozzle upstream pressure required, | Bidder to indicate |
| 10) | Nozzle spray angle, degree | Bidder to indicate . |
| 11) | Nozzle orifice dia, mm | Bidder to indicate |
| 12) | Nozzle coverage dia, mm at height, mm | Bidder to indicate ; |
| 13) | Each nozzle coverage cone dia considered , mm | Bidder to indicate |
| 14) | Droplet size | Bidder to indicate |
| 15) | Nozzle datasheet | Bidder to indicate |
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E - MATERIAL OF CONSTRUCTION:

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| **Description** | **Material** |
| Wash Nozzle assembly | Polypropelene (PP) / CPVC |
| Misting Nozzle assembly | Polypropelene (PP) / CPVC |
| Make up water Nozzle assembly | Polypropelene (PP) / CPVC |
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