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	Process Description: The exhaust fumes from electroplating line are sucked by exhaust blower through the scrubber. Fumes in air move up the packed tower, Counter current to the liquid spray. The process involves establishing maximum contact between liquid and fume using a fine, intense spray with a high-efficiency exchange screen separating each section. The scrubber is equipped with a demister at the top which will remove most of the mist produced by the spraying the tank below and pumped to the ETP pits for effective treatment.	Vender to confirm			
2	Scope of Supply & work				
2.1	Wet type Chemical scrubber of capacity 15000CFM for neutralization of Acid-Alkali fume from 4 tanks for Cyanide Silver plating on Aluminum substrate complete with installation and commissioning, detail as per point 3. This includes suitable interfacing ducting from the exhaust line terminal outside building to Scrubber and from the scrubber to the existing Exhaust Blower. The scrubber is to be supplier complete with its spraying circuit, recycling pump, recirculation tank, automation water supply and level controls and HDPE /PPH piping's required. Relocation of existing Exhaust Blower unit along with chimney to be done for accommodating the scrubber body.	Vender to confirm			

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2.3	(a) Fume Hood blower with Belt Drive- Exhaust Blower unit of 15000 CFM suction capacity with suitable Energy efficient motor, for wet scrubber to be supplied and commissioned along with the Blower housing used for mounting the chimney as detailed in point 5. (b) Suitable chimney (FRP) on the new Blower unit. (c) All the dismantling & modification work involved to be done by the vendor only.	Vender to confirm			
2.4	Vender shall ensure that supplied instrument and electrical wiring and components are suitable for the classification, as per IS : 5572	Vender to confirm			
3	Requirements for 15000 CFM Scrubber				
3.1	Design, manufacturing, supply, installation and commissioning of 15000 CFM capacity with all wet Scrubber – Vertical Flow Packed Tower type with Mist Eliminator complete with all accessories like recirculation pump set & interconnecting HDPE/PPH piping. Scrubber to be suitably fitted between fitted flanges of exhaust duct outlet and Exhaust blower inlet for Cyanide Silver plating on Aluminum substrate Line- I. Detail as below	Vender to confirm			
3.1.1	Material of Construction: The integrated body and water storage tank of the scrubber shall be made out of 5mm thick PPGL sheet + 5mm FRP lining suitable for Acid –Alkali fumes. The structure has to be suitable reinforced for appropriate strength	Vender to confirm			
3.1.2	Access ports/doors: The scrubber shall have suitable access ports/door to allow limited access to the internal parts of the unit for cleaning and other maintenance work. The shell shall have round flanged pipe connections.	Vender to confirm			
3.1.3	Dimension: The scrubber shell diameter is to be in conformance to the 15000 CFM capacity. The height of the packing tower etc. to be designed to suit the capacity. Vender to confirm these parameters in their technical bid.	Vender to confirm			

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3.1.4	Distributor cell/Packing column : The Scrubber shall have packing tower filled with Pall ring Packing mad of PP to ensure maximum contact are for scrubbing fumes while passing through the tower column. The vendor should confirm the size of the pall ring to be used for maximum contact are and length of the column. The packing support grid. The support grid should be strongly reinforced to bear the vibrations and the packing tower.	Vender to confirm			
3.1.5	Spray nozzle: Spray nozzle set to be provided for making liquid cloud which falls on distributor panel as rain. Fumes in air move counter current. The vendor to confirm the spray nozzle detail in technical bid.	Vender to confirm			
3.16	Mist eliminator: The scrubber unit shall have a mist eliminator unit of meshed wire /PVC mounted above packing column to achieve entrained liquid separation. The supplier to mention efficiency of the mist eliminator.				
3.1.7	Recirculation Tank and pump: Bottom of the scrubber unit is used for supplementing supply of water. The size of the tank shall be calculated on the basis of 15000 CFM of the scrubber. It should be a recirculation type of system where the same liquid is sprayed, collected and re –sprayed. On reaching certain level of concentration, this collected liquid is sent to ETP for treatment and new water is filling up. The pipe through which the concentrated Liquid is to be taken to Mixing tank shall also be in the supplier's scope .The supplied. The tank must be equipped with electrically operated solenoid valve for auto filling.	Vender to confirm			
3.1.8	Suitable Pump CI with SS 304 impeller is required for re-circulation of liquid and it is an integral part of the scrubber. The complete set of drive piping, HDPE valves, liquid flow indicator etc. shall be in the scope of the supplier.	Vender to confirm			
3.19	Inspection window: Flow looking windows to be provided to see flow and spray working.	Vender to confirm			
3.110	HDPE/PPH Piping: Freshwater and drain piping to be provided by the vender. The vendor must provide completed schedule for piping work from fresh water line and from storage tank to the drain pits. This will include size and length of the pipes, no and size of the valve, etc.	Vender to confirm			

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4.1.11	Inlet to the scrubber should be matched with our existing round ducting (pipe dia 900 mm app.) flanges and shall be supplied with gaskets and hardware. Similarly outlet to the scrubber should match with the Exhaust Blower round Ducting. Any additional /new Duct needed to be constructed & installed for matching the scrubber with the existing ducts with required hardware and fitting shall be in supplier's scope.	Vendor to confirm			
4.1.12	Packing fill & removal doors have to be provided at suitable place of packing tower.	Vendor to confirm			
4.1.13	The supplier has to furnish General Arrangement drawing for the scrubber unit with relevant dimension.	Vendor to confirm			
4.1.14	Installation and commissioning: the vendor will ensure installation and commissioning of the scrubber unit with existing ducting (inlet and outlet). This will include connecting the pump with fresh water intake and Effluent Treatment Plant with PPH piping. Any other material such as hardware, fitting shall be in supplier's scope.	Vendor to confirm			
5	Requirements for Exhaust Blower unit of 15000 CFM suction capacity:				
5.1	The Exhaust Blower unit 15000 CFM has to exhaust fumes from 5 no Tanks via existing ducting of about 33 mtr length. The Standard (STD) belt drive steel blower and impeller wheel to be epoxy coated for superior chemical resistance. V belt drive adjustable pulleys to permit field balancing. The fan impeller to be statically and dynamically balanced to avoid undue vibrations. Emergency Switches at suitable locations as per international Norms are to be provided. Suitable Energy efficient Motor to have thermal overload protection, Supply: 415 V three phase. Blower housing to support the chimney base.	Vendor to confirm			
6	Performance Guarantee				
6.1	The Vendor shall guarantee	Vendor to confirm			
6.1.1	Sustained operation at the conditions outlined in this specification and relevant documents.	Vendor to confirm			
6.1.2	The mechanical and structural integrity, workmanship and the material of construction used	Vendor to confirm			

for election supervision as
Manager

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6.13	All equipment's shall be guaranteed for up to 12 months from the date of acceptance.	Vender to confirm			
7	Qualifying conditions				
7.1	Following information is to be submitted by the vendor about the companies where similar equipment/ plant have been supplied. Name of nationally renowned companies who have been supplied with at least one such scrubber equipment's and blower of the same or higher capacity in the past 5 year and such equipment is presently working satisfactorily for than two year after commissioning , have to be furnished by the vendor	Vender to confirm			
7.1.1	Name of the customer/company where similar machine/ plant is installed.				
7.1.2	Completed postal address of the customer.				
7.1.3	Year of commissioning.				
7.1.4	Application for which the Scrubbing plant is supplied with detail of accuracies achieved.				
7.1.5	Name and designation of the contract person of the customer.				
7.1.6	Phone, Fax no and email address of the contact person of the customer.				
7.1.7	Either original copy or notary attested copy of commissioning certificate send by customer in respected of successful handing over/taking over/commissioning of the said equipment's.				
7.1.8	Note: Failure to furnish data/certificate relevant under QUALFYING CONDITIONS may result in rejection, of the BHEL reserves the right to do so without furnishing any clarification.				
8	Installation & Commissioning				
	Vendor shall provide qualified personnel for the erection, Installation, testing, pre-commissioning and commissioning of the equipment	Vender to confirm			

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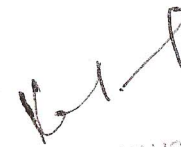
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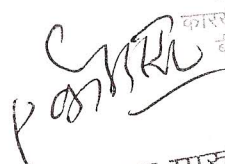
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9	Pre dispatch Inspection				
	BHEL will conduct a pre-dispatch inspection of the item. Once fabrication is complete at supplier's works, supplier has to offer item to BHEL for pre-dispatch inspection. For this purpose, supplier has to inform BHEL at least 15 days prior to the date the item will be offered for inspection. Inspection will be done only on a working day. Vendor will have to provide BHEL personnel safe conditions and any and all facilities as required by the inspection team at supplier's works to access and inspect the item. Vendor will dispatch item only after written consent from the inspection team. If any discrepancies are found by BHEL inspection staff, same will be given in writing to supplier and supplier has to be rectify them before dispatch.	Vender to confirm			


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for Greenas Expansion
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