

BHARAT HEAVY ELECTRICAL LIMITED, JHANSI

Specification No		
Item No		9029
Location		SP/Steam/9029
Quantity		BOILER HOUSE
		ONE NUMBER

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF DM WATER TREATMENT PLANT

Note :

- 1 **VENDOR** must submit complete information against clause No-18.0 (Qualifying Condition). The offer meeting this clause would only be processed
- 2 The "Specified/to be confirmed by vender" Column and where applicable, the " Devitaions" Column of the formate shall be filled in by the Vendor and submitted along with the offer. Technical details also submitted with the offer. Inadequate/ Incomplete. Ambiguos, of unsustainable information against any of the clauses of hte specification / requirement shall be treated as non- compliance.
- 3 The offer and all documents elclosed with offer should be in English languge only.

SCOPE:

DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 12 METRE CUBE CAPACITY DE-MENERIALISED WATER TREATMENT PLANT (DM PLANT) AS PER SPECIFICATION BELOW

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDER	CONFIRM/SPECIFY BY SUPPLIER	DEVIATIONS IF ANY
1.0	PORPOSE & WORK PIECE MATERIAL:			
1.1	DM plant is required to remove impurities in water and pure water may be provided to Boiler.	VENDOR TO CONFIRM		
1.2	DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 12 METRE CUBE CAPACITY DE-MENERIALISED WATER TREATMENT PLANT (DM PLANT)	VENDOR TO CONFIRM		
2.0	SPECIFICATION	VENDOR TO CONFIRM		
2.1	INLET WATER PARAMETER	VENDOR TO CONFIRM		
2.1.1	Total Dissolved Solids : 190 ppm	VENDOR TO CONFIRM		
2.1.2	pH : 7.0	VENDOR TO CONFIRM		
2.1.3	Odour: nil	VENDOR TO CONFIRM		
2.1.4	Taste: Agreeable	VENDOR TO CONFIRM		
2.1.5	Turbidity : 2ppm	VENDOR TO CONFIRM		
2.1.6	Silica : 1 ppm	VENDOR TO CONFIRM		
2.1.7	TSS : <5 ppm	VENDOR TO CONFIRM		
2.2	OUTPUT WATER PARAMETERS	VENDOR TO CONFIRM		
2.2.1	Conductivity : <30 micro siemens	VENDOR TO CONFIRM		
2.2.2	Hardness : <1 ppm	VENDOR TO CONFIRM		
2.2.3	Total Dissoved Solids : < 1 ppm	VENDOR TO CONFIRM		
2.2.4	pH : 7.0-7.5	VENDOR TO CONFIRM		
3.0	FEATURES			
3.1	The equipment to be self contained unit	VENDOR TO CONFIRM		
3.2	The main frame of the equipment shall be heavy, rigidly reinforced welded steel construction.	VENDOR TO CONFIRM		
3.3	The equipum should be streamlined in appearance with maximum resistance to mechanical deflection.	VENDOR TO CONFIRM		
3.4	The whole equipment shall be mounted on four wheeled trolley of which two to be fixed type and two of caster wheel type to help easy movement on the shop floor.	VENDOR TO CONFIRM		
3.5	Necessary eye bolts shall be provided for the lifting the whole unit.	VENDOR TO CONFIRM		
3.6	The overall design must be compact, easy to operate by a single person and easy to maintain.	VENDOR TO CONFIRM		
3.7	The Dm plant shall work on the priciples of ion exchange resin.	VENDOR TO CONFIRM		
3.8	The resin shall be of regenerative type.	VENDOR TO CONFIRM		
4.0	The DM plant shall consist of following :	VENDOR TO CONFIRM		
4.1	Raw water storage Tank Provided by M/s BHEL	VENDOR TO NOTE		
4.2	Filter	VENDOR TO CONFIRM		
4.2.1	Suitable water filter i.e. sand filter, wire mesh filter to separate big impurities from raw water.	VENDOR TO CONFIRM		
4.3	Regeneration pump /Backwash Pump 12000 LPH Provided by M/s BHEL	VENDOR TO NOTE		
4.4	Complete System of Resin Regeneration through Acid , Base & mixed	VENDOR TO CONFIRM		
4.4.1	Strong Acid Cation tank with accessories			

DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 12 METRE CUBE CAPACITY DEMONSTRATED WATER TREATMENT PLANT (DM PLANT) AS PER SPECIFICATION BELOW



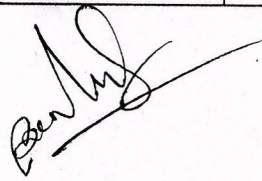

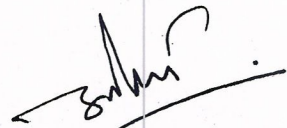
S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDER	CONFIRM/SPECIFY BY SUPPLIER	DEVIATIONS IF ANY
4.4.1.1	1 no., Down Flow vertical type tank of Fiberglass-Reinforced Plastic material with operating pressure: 1.0-3.0 kg/cm2, volumetric capacity > 0.834 m3 and capacity > 12000 LPH.	VENDOR TO CONFIRM & SPECIFY THE SIZE		
4.4.1.2	Type of resin : 225H+ /Equiv.	VENDOR TO CONFIRM		
4.4.1.3	Quantity of resin : 600 Ltr.	VENDOR TO CONFIRM		
4.4.1.4	Type of valves : Multi port valve	VENDOR TO CONFIRM		
4.4.1.5	Re Gen tank capacity : 250 Ltr.	VENDOR TO CONFIRM		
4.4.1.6	Output between regeneration OBR :20 hrs.	VENDOR TO CONFIRM		
4.4.2	Strong Base Anion tank with accessories			
4.4.2.1	1 no., Down Flow vertical type tank of Fiberglass-Reinforced Plastic material with operating pressure: 1.0-3.0 kg/cm2, volumetric capacity > 1.20 m3 and capacity > 12000 LPH.	VENDOR TO CONFIRM & SPECIFY THE SIZE		
4.4.2.2	Type of resin : NIP /Equiv.	VENDOR TO CONFIRM		
4.4.2.3	Quantity of resin : 780 Ltr.	VENDOR TO CONFIRM		
4.4.2.4	Type of valves : Multi port valve	VENDOR TO CONFIRM		
4.4.2.5	Re Gen tank capacity : 250 Ltr.	VENDOR TO CONFIRM		
4.4.2.6	Output between regeneration OBR :20 hrs.	VENDOR TO CONFIRM		
4.4.3	Mixed Bed			
4.4.3.1	1 no., Down Flow vertical type tank of Fiberglass-Reinforced Plastic material with operating pressure: 1.0-3.0 kg/cm2, volumetric capacity > 0.57 m3 and capacity > 12000 LPH.	VENDOR TO CONFIRM & SPECIFY THE SIZE		
4.4.3.2	Type of resin : 225H+ & FFIP/NIP	VENDOR TO CONFIRM		
4.4.3.3	Quantity of resin : cation - 160 Ltr & Anion 235 Ltr.	VENDOR TO CONFIRM		
4.4.3.4	Type of valves : Ball type	VENDOR TO CONFIRM		
4.4.3.5	Re Gen tank capacity : 150 Ltr.	VENDOR TO CONFIRM		
4.4.3.6	Output between regeneration OBR :20 hrs.	VENDOR TO CONFIRM		
4.5	Treated water storage Tank Provided by M/s BHEL	VENDOR TO NOTE		
4.6	Instruments for parameter measurement			
4.6.1	Rotameter for water quantity inlet	VENDOR TO CONFIRM		
4.6.2	Pressure Gauge at each tank & stage	VENDOR TO CONFIRM		
4.6.3	Water Conductivity Meter	VENDOR TO CONFIRM		
4.6.4	pH Meter	VENDOR TO CONFIRM		
4.7	Air Blower			
4.7.1	Suitable capacity blower to mix resin	VENDOR TO CONFIRM		
5.0	OPERATION			
5.1	The equipment shall operate on two different modes	VENDOR TO CONFIRM		
	MODE - 1 : water treatment mode			
	water must be filtered through proper mesh so as to remove unwanted impurities	VENDOR TO CONFIRM		
	MODE-2 : Resin Regenerative Mode			
5.2	While regeneration care must be taken for any leakages so as to avoid any accident	VENDOR TO CONFIRM & SPECIFY		
5.3	Proper mesh to prevent resin wastages.	VENDOR TO CONFIRM		
5.4	Valves and line must not react with acid or base.	VENDOR TO CONFIRM		
6.0	METERING			
6.1	Meter for water flow, water pressure, conductivity of outlet water, pH of output water etc.	VENDOR TO CONFIRM		
7.0	SAFETY			
7.1	The equipment shall be fully safe in operation.	VENDOR TO CONFIRM		
7.2	After treatment and regeneration cycle is over , an auto alarm shall be provided.	VENDOR TO CONFIRM		
8.0	PROTECTION			
8.1	Over current, over voltage and any other relay for the protection of system/ equipment are to be included as well as suitably interlocked for the safe operation.	VENDOR TO CONFIRM		
8.2	Necessary guards and protection covers are to be provided to protect the equipment.	VENDOR TO CONFIRM		
9.0	ACCESSORIES AND TOOLKITS			

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S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY VENDOR	CONFIRM/SPECIFY BY SUPPLIER	DEVIATIONS IF ANY
9.1	The DM plant shall be supplied in ready to use condition ,complete with all standard accessories & pipe interconnection work etc..	VENDOR TO CONFIRM		
10.0	ELECTRICAL& MECHANICALS SUPPLY AND CONTROLS	VENDOR TO CONFIRM		
10.1	The equipment shall be suitable for the operation on 415 Volts, 3 Phase, 50HZ A.C.Supply.	VENDOR TO CONFIRM		
10.2	The necessary cable and connection from control panel to various items of the equipment, isolator for control panel for incoming supply are also to be included in the supply and details to be furnished along with offer.	VENDOR TO CONFIRM		
10.3	Single point 415 Volt 3phase 50Hz A.C.Supply will be provided by BHEL.	VENDOR TO CONFIRM		
10.4	The connection shall be made through copper criming type lugs.	VENDOR TO CONFIRM		
10.5	Control panel wiring shall be made by 2.5 sq. mm copper conductor PVC insulated wire with numbered farrules.	VENDOR TO CONFIRM		
10.6	All controls and electrical & electronics circuits are to be grouped together and located in control panel.	VENDOR TO CONFIRM		
10.7	The motors shall be ABB/Bharat bijlee/GEC/Crompton/ only	VENDOR TO CONFIRM		
11.0	PAINTING			
11.1	Two coats of red oxide metal primer and finished with two coats of synthetic enamel paint of verdigris green paint.	VENDOR TO CONFIRM		
12.0	DOCUMENTATION :			
12.1	During participation in technical Bid.			
	(i) G.A. Drawing./ Lay out diagram	VENDOR TO SUBMIT		
	(ii) Total area required	VENDOR TO SUBMIT		
12.3	After Receipt of Order: (For approval)	VENDOR TO CONFIRM		
	(i)Three set of GA drawing	VENDOR TO CONFIRM		
	(ii)Three sets of electrical schematic and control circuit diagram	VENDOR TO CONFIRM		
12.6	With the supply			
	(i)Three sets of operation manual	VENDOR TO CONFIRM		
	(ii)Three sets of maintenance manual of DM plant. Spares - part list concerned drawing of spares.	VENDOR TO CONFIRM		
	(iii)Catalogues, O&M Manuals of all bought out items including drawings- 3 set	VENDOR TO CONFIRM		
13.0	DETAILS TO BE SUBMITTED WITH THE OFFER			
13.1	Dimensioned outline general arrangement drawing	VENDOR TO SUBMIT		
13.2	Technical literature	VENDOR TO SUBMIT		
13.3	Make, type, capacity & write -up on tank, resin, meters, pipe line and valves used.	VENDOR TO SPECIFY		
13.4	Details of safety devices incorporated.	VENDOR TO SPECIFY		
13.5	Schematic diagram of DM plant.	VENDOR TO SUBMIT		
13.6	Type make and HP of motor of water pump.	VENDOR TO SPECIFY		
13.7	Any special tools required for maintenance and repair of the equipment with item wise price details.	VENDOR TO SUBMIT		
13.8	Total electrical load	VENDOR TO SPECIFY		
13.9	Total weight of the equipment.	VENDOR TO SPECIFY		
13.10	Total space required	VENDOR TO SPECIFY		
13.11	Erection and commissioning charges with duration	VENDOR TO SPECIFY		
13.12	Requirement of power, water, air etc with details like quantity and pressure.	VENDOR TO CONFIRM		
14.0	TRAINING	VENDOR TO CONFIRM		
14.1	Training to our operator, maintenance staff to be done at the time of commissioning of the equipment. (NOT LESS THAN SIX DAYS)	VENDOR TO CONFIRM		
15.0	GUARANTEE:	VENDOR TO CONFIRM		
15.1	24 Months form the date of acceptnce of the equipment.	VENDOR TO CONFIRM		
16.0	MACHINE ACCEPTANCE	VENDOR TO CONFIRM		
	(Tests/Activities to be performed & demonstrated by Vendor)			
16.1	Tests/Activities to be carried out at vendor's works on the Plant before dispatch during Pre-Dispatch Inspection(PDI) by BHEL :	VENDOR TO CONFIRM		

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16.1.1	The equipment is to be inspected, tested & demonstrated as per specification by the representative of BHEL prior to dispatch	VENDOR TO CONFIRM		
16.1.2	Demonstration of all features of the machine, control system & accessories	VENDOR TO CONFIRM		
16.2	Tests/Activities to be carried out at BHEL works while commissioning the machine.	VENDOR TO CONFIRM		
16.2.1	Demonstration of all features of the machine, control system & accessories to the satisfaction of BHEL for efficient and effective use of the machine.	VENDOR TO CONFIRM		
16.2.2	Demonstration by actual use of all supplied accessories to their full capacity for required applications.	VENDOR TO CONFIRM		
17.0	ERECTION AND COMMISSIONING	VENDOR TO CONFIRM		
17.1	Complete erection and commissioning to be done by the supplier with his own labour and tools.	VENDOR TO CONFIRM		
18.0	QUALIFYING CONDITION	VENDOR TO CONFIRM		
18.1	Only those vendors, who have supplied at least two No. DM plant for same or higher capacity in the last five years and such plants are presently working satisfactorily for more than one year after commissioning, should quote. The following information is to be submitted by the Vendor about the companies where DM plant have been supplied. This is required from all the vendors for qualification of their offer.	VENDOR TO CONFIRM		
	1. Name of the customer / company where similar heater is installed.	VENDOR TO SPECIFY		
	2. Complete postal address of the customer.	VENDOR TO SPECIFY		
	3. Year of supplying / commissioning.	VENDOR TO SPECIFY		
	4. Name and designation of the contact person the customer.	VENDOR TO SPECIFY		
	5. Phone, FAX, no and E-mail address of the contact person of the customer.	VENDOR TO SPECIFY		
	6. Performance certificate from the customer regarding satisfactory performance of plant supplied.	VENDOR TO SUBMIT		
19.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/ incorrect, the offer shall be rejected.	VENDOR TO CONFIRM		

				
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