

BHARAT HEAVY ELECTRICAL LIMITED, JHANSI

Specification No
Item No
Location
Quantity

9095/R1
SP/Steam/9095
BOILER HOUSE
ONE NUMBER

SPECIFICATION CUM COMPLIANCE CERTIFICATE OF 15 METRE CUBE/Hr. CAPACITY DM WATER TREATMENT PLANT

Note:

- 1 VENDOR must submit complete information against clause No-13.0 (Qualifying Condition). The offer meeting this clause would only be processed
- 2 The "Specified/to be confirmed by vender" Coloumn and where applicable, the "Devitaions" Coloumn 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 language only.
- 4 Name of supplier/ Vendor
- 5 Name of contact person
- 6 Tele/Mobile No. of contact person
- 7 Fax No.
- 8 E Mail ID;

SCOPE:

DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 15 METRE CUBE/Hr. CAPACITY DE-MENERIALISED WATER TREATMENT PLANT (DM PLANT) AS PER SPECIFICATION BELOW

S.NO.	DESCRIPTION FOR BHEL REQUIREMENT	BHEL Required	CONFIRM / SPECIFY BY VENDOR	DEVIATIONS
1.0	PORPOSE & WORK PIECE MATERIAL:			
1.1	DM plant is required to remove impurities in water to use with Boiler.	VENDOR TO CONFIRM		
1.2	DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 15 METRE CUBE CAPACITY DE-MENERIALISED WATER TREATMENT PLANT (DM PLANT)	VENDOR TO CONFIRM		
2.0	SPECIFICATION			
2.1	INLET WATER PARAMETER			
2.1.1	Total Dissolved Solids : 190 ppm	VENDOR TO NOTE		
2.1.2	pH : 7.2	VENDOR TO NOTE		
2.1.3	Odour: nil	VENDOR TO NOTE		
2.1.4	Taste: Agreeable	VENDOR TO NOTE		
2.1.5	Turbidity : 2ppm	VENDOR TO NOTE		
2.1.6	Silica : 1 ppm	VENDOR TO NOTE		
2.1.7	TSS : <5 ppm	VENDOR TO NOTE		
2.2	OUTPUT WATER PARAMETERS			
2.2.1	PH at 25 ° C --- Shall be adjustable to obtain any value within the band, as per our requirement Band--6.5 to 9.3	VENDOR TO CONFIRM		
2.2.2	Silica as SiO ₂ , ppm (Max) --- Less than 0.05	VENDOR TO CONFIRM		
2.2.3	Dissolved Oxygen, ppm (Max)-- 0.02	VENDOR TO CONFIRM		
2.2.4	Iron , ppm (Max)-- 0.05	VENDOR TO CONFIRM		
2.2.5	Specific Conductivity micro mho/cm-- Less than 10	VENDOR TO CONFIRM		
2.2.6	Total Hardness, ppm (Max)-- 01	VENDOR TO CONFIRM		
2.2.7	Total Hardness in ppm Ca Co ₃ -- Nil	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 equipmt 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 priciple of ion exchange resin.	VENDOR TO CONFIRM		
3.8	The resin shall be of regenerative type.	VENDOR TO CONFIRM		
3.9	Valves and line must not react with acid or base.	VENDOR TO CONFIRM		
3.10	Proper mesh to prevent resin wastages.	VENDOR TO CONFIRM		
3.11	Raw water and Treated water storage Tank will be Provided by M/s BHEL	VENDOR TO NOTE		
3.12	Flow Rate--15m ³ /Hr.	VENDOR TO CONFIRM		
3.13	Operating Hours -- 22Hrs./day	VENDOR TO CONFIRM		
3.14	Total No. of motors, make and KW rating & pumps.	VENDOR TO SPECIFY		
3.15	Total No. of pumps & make	VENDOR TO SPECIFY		
3.16	Total electrical load	VENDOR TO SPECIFY		
3.17	Approx. Total weight of the equipment.	VENDOR TO SPECIFY		
3.18	Erection and commissioning. duration	VENDOR TO SPECIFY		
3.19	Pressure Gauge at each tank & stage(Min 03 No.)	VENDOR TO CONFIRM		
3.20	Level Switchs-02 No.	VENDOR TO CONFIRM		

E 7160 624

(3)

DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 15 METRE CUBE CAPACITY DE-MINERALISED WATER TREATMENT PLANT (DM PLANT) AS PER SPECIFICATION BELOW

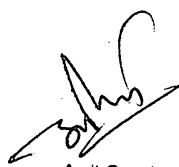
3.21	Rotameter for water inlet quantity measurement -01No.	VENDOR TO CONFIRM		
4.0	The DM plant shall consist of following :			
4.1	Filter			
4.1.1	Suitable water filter i.e. sand filter, wire mesh filter to separate big impurities from raw water.	VENDOR TO CONFIRM		
4.2	Complete System of Resin Regeneration through Strong Acid & Strong Base			
4.2.1	Strong Acid Cation tank with accessories			
4.2.1.1	1 no., Down Flow vertical type tank	VENDOR TO CONFIRM		
4.2.1.2	Operating Pressure-1.0-3.0 Kg/cm ² (Approx.)	VENDOR TO SPECIFY		
4.2.1.3	Vessel MOC	VENDOR TO SPECIFY		
4.2.1.4	Vessel Size (Dia X H)	VENDOR TO SPECIFY		
4.2.1.5	Type of resin :	VENDOR TO SPECIFY		
4.2.1.6	Quantity of resin :	VENDOR TO SPECIFY		
4.2.1.7	MOC of AMT Tank	VENDOR TO SPECIFY		
4.2.1.8	AMT tank capacity :	VENDOR TO SPECIFY		
4.2.1.9	Regenerant (Lit. of 100 % HCL)	VENDOR TO SPECIFY		
4.2.1.10	OBR (Approx.330m ³)	VENDOR TO SPECIFY		
4.2.2	Strong Base Anion tank with accessories			
4.2.2.1	1 no.,Down Flow vertical type tank	VENDOR TO CONFIRM		
4.2.2.2	Operating Pressure1.0-3.0 Kg/cm ² (Approx.)	VENDOR TO SPECIFY		
4.2.2.3	Vessel MOC	VENDOR TO SPECIFY		
4.2.2.4	Vessel Size (Dia X H)	VENDOR TO SPECIFY		
4.2.2.5	Type of resin	VENDOR TO SPECIFY		
4.2.2.6	Quantity of resin :	VENDOR TO SPECIFY		
4.2.2.7	MOC of CDT Tank	VENDOR TO SPECIFY		
4.2.2.8	CDT tank capacity :	VENDOR TO SPECIFY		
4.2.2.9	Regenerant (Kg. of 100 % NaOH)	VENDOR TO SPECIFY		
4.2.2.10	OBR (Approx.330m ³)	VENDOR TO SPECIFY		
4.3	Supply of following items on optional basis shall be covered in the offer and their prices may be indicated seperatly in the price bid for the consideration of BHEL at the time of P.O.placement.			
4.3.1	Meter to check Water Conductivity -01No.	VENDOR TO CONFIRM		
4.3.2	Meter to check pH value-01No.	VENDOR TO CONFIRM		
4.3.3	Meter to check Silica as SiO ₂ , ppm--01No.	VENDOR TO CONFIRM		
4.3.4	Meter to check Dissolved Oxygen, ppm--01No.	VENDOR TO CONFIRM		
4.3.5	Meter to check Iron , ppm--01No.	VENDOR TO CONFIRM		
4.3.6	Meter to check Specific Conductivity micro mho/cm--01No.	VENDOR TO CONFIRM		
4.3.7	Meter to check Total Hardness, ppm --01No.	VENDOR TO CONFIRM		
4.3.8	Meter to check Total Hardness in ppm Ca Co ₃ --01No.	VENDOR TO CONFIRM		
5.0	PAINTING			
5.1	Two coats of red oxide metal primer and finished with two coats of synthetic enamel paint of verdigris green paint.	VENDOR TO CONFIRM		
6.0	SAFETY			
6.1	The equipment shall be fully safe in operation.	VENDOR TO CONFIRM		
6.2	After treatment and regeneration cycle is over , an auto alarm shall be provided.	VENDOR TO CONFIRM		
6.3	List of safety device incorporated in D M plant	VENDOR TO SPECIFY		
6.4	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		
6.5	Necessary guards and protection covers are to be provided to protect the equipment.	VENDOR TO CONFIRM		
7.0	TRAINING			
7.1	Training to bhel person / operator/ maintenance staff to be given at the time of commissioning of the plant. (NOT LESS THAN SIX DAYS)	VENDOR TO CONFIRM		
8.0	DOCUMENTATION :			
8.1	During participation in technical Bid.			
	(i) Dimentional G.A. Drawing./ Dimentional Lay out diagram	VENDOR TO SUBMIT		
	(ii) Total area required	VENDOR TO SPECIFY		
	(iii) Technical literature	VENDOR TO SUBMIT		
	(iv) Process Flow chart of DM plant.	VENDOR TO SUBMIT		
8.2	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		
8.3	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		
9.0	GUARANTEE:			

E 7160 621

(2)

DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING OF 15 METRE CUBE CAPACITY DE-MINERALISED WATER TREATMENT PLANT (DM PLANT) AS PER SPECIFICATION BELOW

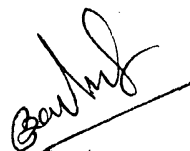
9.1	24 Months from the date of commissioning of the plant	VENDOR TO CONFIRM		
10.0	MACHINE ACCEPTANCE (Tests/Activities to be performed & demonstrated by Vendor)			
10.1	Tests/Activities to be carried out at vendor's works on the Plant before dispatch during Pre-Dispatch Inspection(PDI) by BHEL :			
10.1.1	The equipment is to be inspected , tested & demonstrated as per specification by the Vendor to the representative of BHEL prior to dispatch	VENDOR TO CONFIRM		
10.1.2	Demonstration of all features of the Plant , control system & accessories	VENDOR TO CONFIRM		
10.2	Tests/Activities to be carried out at BHEL works while commissioning the machine.			
10.2.1	Demonstration of all features of the D M Plant & all supplied accessories to the BHEL STAFF for efficient and effective use of the Plant as per specification.	VENDOR TO CONFIRM		
11.0	ERECTION AND COMMISSIONING	VENDOR TO CONFIRM		
11.1	Complete erection and commissioning to be done by the supplier with his own labour and tools.	VENDOR TO CONFIRM		
11.2	Vendor shall take full responsibility to prove the output parameters of D.M Plant with his own instruments/ equipment.	R		
12.0	GENERAL CONDITION	VENDOR TO CONFIRM		
12.1	The equipment shall be suitable for the operation on 415 Volts, 3 Phase, 4 wire, 50HZ A.C. Supply. As single point 415 Volt 3phase 4 wire 50Hz A.C. Supply will be provided by BHEL.	VENDOR TO CONFIRM		
12.2	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		
12.3	Control panel wiring shall be made by copper conductor PVC insulated wire with numbered ferrules.	VENDOR TO CONFIRM		
12.4	All controls and electrical & electronics circuits are to be grouped together and located in control panel.	VENDOR TO CONFIRM		
12.5	The DM plant shall be supplied in ready to use condition ,complete with all standard accessories & pipe interconnection work etc..	VENDOR TO CONFIRM		
12.6	First fill of All chemicals [acid ,base ,Regenerant chemical) to be supplied with plant by vendor.	VENDOR TO CONFIRM		
12.7	Anything else which is required to run the plant will be in the scope of vendor.	VENDOR TO CONFIRM		
13.0	QUALIFYING CONDITION	VENDOR TO CONFIRM		
13.1	Only Manufacturer/ Authorised agent (OEM/ Authorisation certificate required) , who have supplied at least one No. DM plant of same or higher capacity(15 m3/Hr) in the last five years should quote along with following supporting documents. (i) Relevant Purchase order copy of D.M.Plant of same or higher capacity (15 m3/Hr) supplied in the last five years (ii) Installation Report / Commissioning Report/ Performance certificate related to above purchase order must be submitted by vendor	VENDOR TO SUBMIT		
14.0	BHEL reserves the right to verify information submitted by vendor. In case any information is found to be false/ incorrect, the offer shall be rejected.	VENDOR TO CONFIRM		



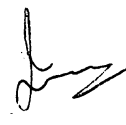
Amit Goyal
Sr. ENG.(WEX)



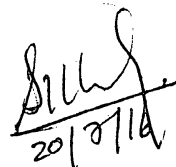
Y.K. Dhingra
Dy. Mgr.(WEX)



S.K. Bajpayee
Mgr(WEX)



Inder Mathur
D.G.M.(WEX)



S.J. Chakraborty
(AGM(WEX))

Check list of document submission against specification No. 9095/R1 for D M Plant

Sl.No.	Document required	Page No.	Submitted	Not Submitted	Customer Name
1	Filled up techno commercial specification sheet (No. 9095/R1,03 pages) attached with the enquiry/tender				XXXXXXXXXXXX
2	Submission of all drawings (layout,GA)as specified in the specificationsheethas been submitted][Spec. SI.No-8.1(ii)]				XXXXXXXXXXXX
3	Submission of Technical literature of offered model submitted				XXXXXXXXXXXX
4	Submission of process flow chart has been submitted.[Spec. SI.No-8.1(i)]				XXXXXXXXXXXX
5	Submission of OEM/ Authorisation certificate [Spec. SI.No-13.1]				XXXXXXXXXXXX
6	Submission ofPurchase order copy of D.M.Plant of same or higher capacity(15 m3/Hr) supplied in the past five years submitted[Spec. SI.No-13.1(ii)]				XXXXXXXXXXXX
7	Submission of Installation Report/ Commissioning Report/ Performance certificate from the customer regarding satisfactory performance of D.M.Plant supplied against above mension P.O. submitted.[Spec. SI.No-13.1(ii)]				

Handwritten signature

EB160 621

~~EB160 621~~

①