



429-002/A

BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
 HIGH PRESSURE BOILER PLANT
 PURCHASE DEPARTMENT - FOSSIL BOILERS
 THIRUCHIRAPALLI - 620014
 TAMILNADU (INDIA)

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	Enquiry No	Enquiry Date	Due Date for Quotation
	2001400442 - 56	02.07.2014	28 07.2014
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	Supply of Self cleaning 20 micron Water Filter (Disc type) for water tank at Civil Factory (Detailed specification enclosed). SELF CLEANING WATER FILTER	NO	4.000	4.00	30.09.14

General Note:

1. GENERAL TERMS AND CONDITIONS OF ENQUIRY REF:BHEL/PSS/190
2. SCOPE OF SUPPLY
3. TECHNICAL SPECIFICATION FOR AUTOMATIC DISC FILTERS
4. BASIC DESIGN SHEET
5. CONTROL PHILOSOPHY (a) & (b)
6. TECHNICAL DATA SHEET-I
7. TECHNICAL DATA SHEET-II

INTERESTED VENDORS ARE REQUESTED TO CONFIRM EACH AND EVERY POINT WITHOUT FAIL.

Enclosures:

"LD clause has to be confirmed without fail."
 "Payment to vendors will be made only thro E-Payment mode"

The offers should reach us 30 minutes before the time of opening of tenders.
 The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
 For BHARAT HEAVY ELECTRICALS LIMITED

M. SHANMUGASUNDARAM
 Purchase Officer
 MM / MFG / Purchase / PSS
 BHEL, TRICHY - 620 014.

MANAGER / PURCHASE
 (FOSSIL BOILERS)
 Yours faithfully,

1. The tender will be operated on two part bid basis i.e. (I). *Techno-Commercial Bid* & (II). *Price Bid*.

2. **Techno-Commercial Bid:** Containing Technical details, specifications, commercial terms and conditions like percentage of P&F charges, Freight & Insurance, ED WITH CESS, Taxes (BHEL will not provide "C" form for Non-Production Items), delivery terms, delivery schedule, validity of offer, payment terms (except price details), acceptance for LD clause, etc. as per ANNEXURE-A (**submitted in your company letter head**) shall be put in a cover (1) and super scribed as "Techno-Commercial Bid" for Enquiry No:Dt:Due Dt.:

3. **Price Bid:** Containing the price details shall be put in a separate cover (2) and superscribed as "Price Bid "for Enquiry No:Dt:Due Dt.: as per ANNEXURE –B (**submitted in your company letter head**)

4. You are requested to put the above two envelopes (Techno-Commercial Bid & Price Bid) inside a separate larger sealed envelope and this envelope shall be super scribed as "Techno-Commercial Bid and Price Bid" for Enquiry No:Dt:Due Dt.:

Your Quotations should be sent to:

*The Manager,
Purchase Department / PSS,
Materials Management / Raw Materials,
24 Building (4th Floor),
Bharat Heavy Electricals Limited,
Tiruchirappalli - 620 014.*

5. Tender should not be addressed to any individual's name but only by designation.

6. Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested; all amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.

7. Please submit point wise compliance to our specifications, terms and conditions. **Otherwise it will be presumed that you are accepting BHEL's terms and conditions.**

8. Offer/s received after *due date* and time: 02:00 pm will not be considered under any circumstances.

9. **Validity of quoted rates should be maintained for 90 days from the date of Tender opening for ordering (Technical Bid). The quoted/Finalized rates shall be Firm till completion of the supplies.**

10. The rates are to be quoted on F.O.R. destination basis (Inclusive of Packing, Forwarding, and Freight and Transit Insurance charges to supplier account). **All the items should be supplied at our stores, BHEL / TRICHY-14 at your own cost. Offers with any other delivery conditions will be rejected.**

IMPORTANT NOTE: (I) Delivery condition like Ex-works / Ex-godown / Transportation of materials through transport carriers from your works up to the transport carrier's office at Tiruchy and taking delivery of goods by BHEL from such office of transport carriers is not acceptable to us)

11. Unloading at BHEL Site has to be done by the suppliers and BHEL will not be in a position to provide any handling/unloading facilities.

12. Payment Terms (Indigenous)

Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.

Any deviation in the above payment term will attract loading as mentioned below.

"Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

13. Liquidated Damages / Penalty:-

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

14. If Guarantee / Warranty period is applicable as per tender specification, No deviation permitted and deviated offers are liable for rejection.

15. IMPORTANT NOTE: BHEL WILL CONSIDER THE RANKING AFTER THE LOADING IS APPLIED AS REFERRED ABOVE WHEREVER DEVIATIONS ARE OBSERVED.

16. No revision of prices will be entertained at any circumstances after tenders are opened.

17. If any sales tax is payable as extra to the quoted price it should be specifically stated in quotations along with CST & VAT Number failing which the purchaser will not be liable for payment of sales tax. Our TIN 33243560005 dt.01.01.2007 & CST no 239383 DT, 11.06.1991

18. On the due date of tender opening, only the technical bids will be opened. Technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. The price bids of techno-commercially suitable bidders will be opened at a later date with prior intimation to respective suitable bidders.

19. Ranking L-1, L-2 etc. shall be done generally on each individual items for the techno-commercially acceptable offers on landed cost to BHEL, Trichy basis and BHEL reserves the right to place order for individual items with different vendors. At special circumstance ranking shall be done on compatible basis which will be indicated through Enquiry special instruction General Notes.

20. BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion.

21. Lowest price received against BHEL tenders need not be the technically acceptable one and in that case BHEL reserves the right not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.

22. BHEL reserves the right to negotiate or refloat the tender opened, if L1 price is not the lowest acceptable price to BHEL due to inter-alia other reasons.

23. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.

24. RISK PURCHASE: Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the previous supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The new supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause.

25. PREFERENTIAL DELIVERY:(Applicable in the case of BHEL's Enquiry specifies Preferential Delivery in the Special Instructions) It should be noted if a contract is placed on a higher tendered as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R destination, including all elements of freights, Sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract, such difference amount in addition to penalty at the rate mentioned in our LD clause.

26. CENVAT CREDIT: If any Excise Duty is payable, the Chapter Head / Sub -head reference and the rate of the duty should be quoted. If the Tenderer is availing CENVAT credit for this input material, the effect of Performa credit should be passed on to the purchaser. Tenderer under "CENVAT" shall be preferred.

27. Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted by purchaser in written will not be applicable to the contract.

28. VENDORS CURRENTLY NOT REGISTER WITH BHEL TRICHY & WISH TO PARTICIPATE TO IN THIS ENQUIRY SHOULD FURNISH THE FOLLOWING DOCUMENTRY PROOF / INFORMATION ALONG WITH OFFER, OTHERWISE YOUR OFFER WILL NOT BE CONSIDERED FOR EVALUATION.

- a) Copy of Registration certificate
 - b) Banker's Information with copy of Bank Pass Book first Page.
 - c) Complete postal address with Pin Code.
 - d) Contact Person /s , Phone No, Mobile No, FAX No, Email ID etc.
 - e) Copy of statutory documents – VAT / TIN / EXICISE REGISTRATION / SERVICE TAX REGISTRATION / CST REGISTRATION etc
 - f) ISO certificate (if applicable)
 - g) Copy Purchase Order & Experience certification as proof of supply of similar item to any Govt. Agencies / PSU / Organizations.
 - h) Balance Sheet for last three financial years along with audit report is to be submitted.
 - i) Partnership Deed if applicable.
- 29 Special Provisions for Micro and Small Enterprises (MSME) bidders registered as per MSME act:
- i) 20% of the tendered quantity is earmarked for MSME suppliers in this tender.
 - ii) Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSME owned by SC/ST entrepreneurs.
 - iii) In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
 - iv) MSME suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II)
 - v) Valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed as per Annexure I) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over.
 - vi) Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.
30. For verification of data submitted towards evaluation of bidder's capability, BHEL may decide to visit the bidder(s) works. Any fact found deviating from submitted data shall make the bidder liable to be disqualified.
31. In the event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors.
32. The correspondence between the bidder and BHEL through email is considered as valid document Legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties

N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.



Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.

Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant

ANNEXURE -A

KINDLY SPECIFY ALL ENQ SL NOS AS PER BHEL ENQUIRY. (SUBMITTED IN COVER NO: 1)

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	WHETHER QUOTED/ NOT QUOTED
10			

COMMERCIAL TERMS CONFIRMATION REQUIRED FROM THE SUPPLIERS (SUBMITTED IN COVER NO: 1)

SL NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION
1	VALIDITY	90 Days from Date of tender opening	YES / NO
2	DELIVERY REQUIREMENTS	FOR-DESTINATION BHEL STORES TRICHY -620014	YES / NO
3	BASIC PRICE	SUPPLIER SHOULD MANDATORLY QUOTE THE BASIC PRICE ON EX-WORKS BASIS	YES / NO
4	PACKING & FORWARDING IF ANY IN % ON EX WORKS BASIC QUOTED RATE (Whether inclusive (or) extra)	SUPPLIER TO QUOTE	
5	EXCISE DUTY WITH CESS (Whether inclusive (or) extra) Clearly mention the percentage (or) amount	SUPPLIER TO QUOTE	
4	VAT / CST IN FULL % Clearly mention the percentage.	SUPPLIER TO QUOTE	
5	FREIGHT IN PERCENTAGE ON EX WORKS BASIC QUOTED RATE	SUPPLIER SHOULD MANDATORLY QUOTE PERCENTAGE OF FREIGHT IN % ON BASIC QUOTED RATE	
6	SERVICE TAX IF ANY FOR FREIGHT ELEMENT ONLY	SUPPLIER TO QUOTE	
7	Service Tax if any for Erection and commissioning	SUPPLIER TO QUOTE	
8	DEIVERY SCHEDULE	AS PER TENDER SCHEDULE	
9	PAYMENT TERMS	As per Clause 12 of Terms and Conditions of the Enquiry (Two Part Bid)	
10	LD CLAUSE	As per Clause 13 of Terms and Conditions of the Enquiry (Two Part Bid)	
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL :	
12	GUARANTEE / WARRANTY	REQUIRED/ NOT REQUIRED	
13	PERFORMANCE BANK GURANTEE	REQUIRED	

TSR

N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.

ANNEXURE –B

PRICE BID FORMAT OF ALL QUOTED ITEMS, IF ANY ITEM YOUR ARE NOT QUOTED SIMPLY YOU SHOULD MENTION AS "NOT QUOTED" AGAINST THAT ENQ SL NO. (SUBMITTED IN SEPARATE COVER NO: 2)

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	SUPPLIER SHOULD BE QUOTED EX-WORK BASIC PRICE ONLY IN RS (ALL OTHER TERMS ARE ALREADY QUOTED IN ANNEXURE –A)
10			



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Purchase Officer
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Scope Of Supply

The Scope of the work will include design, engineering, manufacture, assembly, testing, packing, delivery, erection, commissioning & training. All interconnecting piping for the above with accessories like inlet valves, outlet valve, bypass valve, backwash pump, compressors, gauges, instruments, manifold, provision for CIP etc..will be in supplier scope. BHEL will provide power supply to the control panel which will be located nearer to the equipment. The necessary civil support/foundation will be provided by BHEL. The vendor to connect piping from Filter skid to existing BHEL line however BHEL will provide the required material for the same



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Technical Specification For Automatic Disc Filters

a) Flow rates:

Sl no.	Tank No.	Elevation :mtr	Storage ht: mtr	Line size: mtr	Consumption: m3/day	Avg flow/hr: m3/hr	Design flow based on peak: m3/hr
1	2	20	4.5	150	600	25	40
2	3	35	4.7	300	1400	58	100
3	FCB	36	6	150	500	21	40
4	CCDP	31	5.7	75	500	21	40

- b) Filtration Degree : 20 micron
- c) Operating pressure : 1.5 bar to 4 bar
- d) Design pressure : 8 bar
- e) Water source : River water
- f) TSS : <20 PPM
- g) Application : Drinking/process
- h) Temperature : Ambient
- i) Location : Outdoor installation



N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.

Basic Design.

The Filter shall be designed for following parameters:

- Flow rate
- Minimum Inlet Pressure
- Filtration Degree
- Inlet TSS in mg/l or ppm
- Minimum water used for draining / flushing
- Cleaning Process

a) Normal and Maximum Flow rate: The system should be capable of handling the specified design flow rate.

b) Minimum Inlet Pressure: The Filter shall be capable for operating with a minimum inlet pressure 1.5 bar to 8 bar maximum.

c) Inlet TSS in mg / or ppm : Based on the inlet TSS load the filter selection shall be done accordingly with minimum flushing cycles.

d) Minimum water for flushing: The water used for flushing shall not exceed 1% of the rated flow.

e) Cleaning mechanism: The cleaning shall be done with backwashing principle by

i) For System with Flow rate 40 m³/hr:

Providing an accumulator tank immediate after filtration pod for storing Filtered water & then pushing back the Filtered water from accumulator tank with Air aided pressure thus backwashing the disc filter.

ii) For System with Flow rate 100 m³/hr & above:

To provide an external backwash pump of minimum 50 m³/hr @ 55 mtr head & then activating the pump once the flushing cycle is initiated.



R. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 013

Control Philosophy:

a) For Flow 40 m³/hr system:

- Filtration Process

During the filtration mode water flows through the INLET VALVE to the 2" FILTER and flows out clean through the ACCUMULATOR to the OUTLET VALVE. At this stage the ACCUMULATOR fills up with filtered water.

- Backwashing Process

1. The CONTROLLER transmits a pulse (as per pressure differential or time, whichever is first).
2. Pneumatic command from the solenoid sends a pressure pulse to two users simultaneously.

- A. To the INLET VALVE converting it from filtration mode to backwash mode.
- B. To the OUTLET VALVE Opens the AIR PORT.

- . The compressed air enters the ACCUMULATOR .
- . The piston of the FILTER rises, thus decompressing discs.
- . The air is mixed with filtered water and is carried to the FILTER which is then backwash.
- . The ratio between air and water will rise until there is hardly any water at termination (air alone should not spin the discs).

The backwash will be initiated by DP or timer whichever comes first. Each Filter Pod is backwashed sequentially one by one, while the other Pod continue to supply filtered water downstream.



Dr. Arvind K. Chavhan
Principal Engineer
M/s. ABC Engineering
Bldg. 10/11, Sector 10

b) For Flow 100 m³/hr & above system

- Filtration Process

During filtration, water flows from inlet manifold, through the inlet valve into the filters, and through the outlet valve. Filtered water gathers in the outlet manifold and flows into the user system.

- Back wash Process

The backwash process is initiated by the control unit according to differential pressure between the inlet and outlet or time. The first solenoid transmits a command to two valves:

1. In the Inlet valve the inlet port closes and the drain port opens.
2. In the outlet valve the outlet port closes and the external source port opens.

The First POD will be in backwash mode. The 5 spines in filter No. 1 operate simultaneously, releasing the compressed discs. Tangential jets of water are pumped against the discs, causing them to spin fast and free, flushing trapped solids out to the drain.

The filtered backwash water is supplied by an external source through the external source manifold. The contaminated water from the backwashed filter drains through the drainage manifold. Backwash time per filter is 10-20 seconds. When the time elapses the control unit stops the backwash signal to the solenoid. The solenoid releases the command allowing the inlet / outlet valve and the discs of the 5 spines to return to filtration mode.

Once filter No. 1 is in the filtration position again the control unit sends a command to begin the backwash process in filter No. 2.



N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014,

TECHNICAL DATA SHEET - I

PROCESS & PERFORMANCE DATA:

FILTER LOCATION	TANK NO. 2, TANK FCB, TANK CCDP
FLOW RATE	40 CUM/HR
LIQUID HANDLED	RIVER WATER
ANTICIPATED RECOVERY	99%
DESIGN TEMPERATURE	55°C
LOCATION OF INSTALLATION	OUTSIDE
TOTAL SUSPENDED SOLIDS IN WATER	20 PPM
DESIGN PRESSURE	8 BAR.

DISC FILTER SKID

NUMBER OF PODS FOR FILTRATION	8
NUMBER OF POD FOR WATER ACCUMULATION	1
NO OF SPINES/POD	1
TYPE	AUTOMATIC DISK FILTERS
CLEANING	BACKWASHING PRINCIPLE WITH AIR AIDED INTO AN FILTERED WATER IN EXTERNAL ACCUMULATOR***
MATERIAL OF CONSTRUCTION	
MATERIAL OF ELEMENT	POLY PROPYLENE (PP)*
FILTRATION DEGREE	20 MICRON DISK**
HOUSING MATERIAL	POLY PROPYLENE (PP)*
PIPING MATERIAL	POLY PROPYLENE (PP)*
CLAMPS	VICTAULIC

Handwritten signature

INSTALLATION AND UTILITY REQUIREMENT

INLET	6" FLANGES (ANSI/ASME B16.5 #150)
OUTLET	6" FLANGES (ANSI/ASME B16.5 #150)
DRAIN	6" FLANGES (ANSI/ASME B16.5 #150)
BACKWASH FLOW PER POD	10 CUM/H
BACKWASH VOLUME PER MODULE	265 TO 530 LTRS
AIR PRESSURE NEEDED	6-7 BAR COMPRESSED AIR
SURFACE AREA PER FILTER	7040 CM2
FILTRATION VOLUME PER FILTER	9184 CM3

NORMAL BACKWASH SEQUENCE ANTICIPATED AS FOLLOWS

BACKWASH DURATION	80 TO 160 SEC
BACKWASH FREQUENCY	20-24 CYCLES PER DAY (DEPENDS ON DIRT LOAD CONDITION.)

INSTRUMENTATION

DIFFERENTIAL PRESSURE SWITCH	BETWEEN INLET & OUTLET
PRESSURE GAUGE	FOR MEASURING INLET & OUTLET

CONSTRUCTION OF MATERIAL


FILTERS AND HEADERS	POLYPROPYLENE*
BOLT,NUTS,WASHERS(DRY PART)	304 SS
SPINE SPRING (WET PART)	316 SS
ADAPTERS & TUBING	POLYMERS MATERIAL
FLANGES	PP INJECTED ONTO A CS CORE / GRP
PRESSURE GUAGE	316 STAINLESS STEEL

NOTE: -

*The MOC of Housing, manifold & Disc shall be in Polypropylene only, Polyethylene not acceptable.

**Filtration efficiency: The width of the grooves on disk shall be same & uniform. Variation in grooves on disk is not acceptable

***The compressed air should enter the external accumulator tank during backwashing, air should not be injected in Filtration Pod directly.


N. SHANMUGASUNDARARAJU
Purchase Officer
MWD / MFG / Purchase / PS3
BHEL, TRICHY - 620 016.

TECHNICAL DATA SHEET - II

PROCESS & PERFORMANCE DATA:

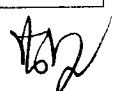
FILTER LOCATION	TANK NO. 3
FLOW RATE	100 CUM/HR
LIQUID HANDLED	RIVER WATER
ANTICIPATED RECOVERY	99%
DESIGN TEMPERATURE	55°C
LOCATION OF INSTALLATION	OUTSIDE
TOTAL SUSPENDED SOLIDS IN WATER	20 PPM
DESIGN PRESSURE	8 BAR.

DISC FILTER SKID

NUMBER OF PODS FOR FILTRATION	4
NUMBER OF SPINES/POD	MINIMUM 5 NUMBERS*** (MULTY SPINE IN ONE POD)
TYPE	AUTOMATIC DISK FILTERS
MATERIAL OF CONSTRUCTION	
MATERIAL OF ELEMENT	POLY PROPYLENE (PP)*
FILTRATION DEGREE	20 MICRON DISK**
HOUSING MATERIAL	POLY PROPYLENE (PP)*
PIPING MATERIAL	POLY PROPYLENE (PP)*
CLAMPS	VICTAULIC TYPE

INSTALLATION AND UTILITY REQUIREMENT OF EACH MODULE

INLET	8" FLANGES (ANSI/ASME B16.5 #150)
OUTLET	8" FLANGES (ANSI/ASME B16.5 #150)
DRAIN	4" FLANGES (ANSI/ASME B16.5 #150)
BACKWASH FLOW PER POD	50 CUM/H
BACKWASH VOLUME PER MODULE	660 TO 1220 LTRS
AIR PRESSURE NEEDED	6-7 BAR COMPRESSED AIR


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SURFACE AREA PER FILTER	17,600 CM2
FILTRATION VOLUME PER FILTER	22,959 CM3

NORMAL BACKWASH SEQUENCE ANTICIPATED AS FOLLOWS

BACKWASH DURATION	40 TO 80 SEC
BACKWASH FREQUENCY	20-24 CYCLES PER DAY (DEPENDS ON DIRT LOAD CONDITION.)

INSTRUMENTATION

DIFFERENTIAL PRESSURE SWITCH	BETWEEN INLET & OUTLET
PRESSURE GAUGE	FOR MEASURING INLET & OUTLET

CONSTRUCTION OF MATERIAL

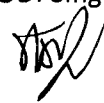
FILTERS AND HEADERS	POLYPROPYLENE*
BOLT,NUTS,WASHERS(DRY PART)	304 SS
SPINE SPRING (WET PART)	316 SS
ADAPTERS & TUBING	POLYMERS MATERIAL
FLANGES	PP INJECTED ONTO A CS CORE / GRP
PRESSURE GUAGE	316 STAINLESS STEEL

NOTE: -

*The MOC of Housing, manifold & Disc shall be in Polypropylene only, Polyethylene not acceptable.

**Filtration efficiency: The width of the grooves on disk shall be same & uniform. Variation in grooves on disk is not acceptable

***The POD should be multy spine design I,e minimum 5 nos. of spine in single POD. Single spine design not acceptable for Flow of 100 m3/hr & above.



N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.