

SOUTH ASIAN FORUM FOR ENVIRONMENT (SAFE)
P 32 J.U.E.Housing Society, Ground Floor
PO: Panchasayar, Kolkata 700094 WB

TENDER NOTICE

1. Sealed tenders are hereby invited in Single Stage Two Bid System i.e Technical Bid and Cost Bid from Manufacturing Firms and/or their Authorised Dealer/Distributors for supply of **Solar power run Automatic Water Purification RO Plant (1000 Ltr/Hrs)**. The item is required to be delivered at **P 32 J.U.E.Housing Society, Ground Floor, PO: Panchasayar, Kolkata 700094 WB** by the firm under own arrangement, **within seven (07) working days** from the date of publication of tender notice.
2. Tender papers with complete sets of Terms & Conditions and details specifications can be downloaded from our web site www.safeinch.org/tender/
3. **Submission of Tender Documents**

The following will be strictly adhered to while filling up the tender documents as given in Appendix A and B:-

- a) Only the enclosed formats (Appendix 'A' and Appendix 'B') or their Photostat copies will be used. Companies will affix their company's stamp in the space provided at the bottom of each sheet and authorised signatory of the Company must sign each page. Additional sheet, duly authenticated, may be attached to elucidate specifications or clarify a point.
 - b) The cost to be indicated for each item should be the landed cost of the item at the consignee location inclusive of all taxes, levies, freight and duties and also cost of installation/commissioning/testing which will be quoted separately in Commercial offer.
 - c) Total cost for the complete delivery, installation, training of each component will be clearly indicated.
 - d) Incomplete quotation will be rejected.
 - e) All quotations will be in sealed envelope.
 - f) Only OEM or will respond to this tender enquiry. If OEM is participating in the tender then its dealers are barred to participate.
 - g) Technical and commercial offers/Cost bid will be submitted on specific format enclosed with this tender document in separate envelope marked "Technical Offer" and "Commercial Offer". EMD will be submitted along with Technical offer.
 - h) Full name and status of the person signing the tender documents must be clearly mentioned in the tender.
 - i) In case submission of any photocopies of any documents, the same should be attested by any Gazetted Officer/Notary. If not found attested, tender documents submitted by participating firms will be rejected / Invalidated out
4. Tenders will be received up to 25th March 2014 and will be opened at 16.00 Hrs hours on the same day.

5. **Receipt / Opening of Tenders:**

Tenders will be submitted in Single Stage Two bid system (Technical & Cost Bid) in two different envelopes / covers as per following details :-

- (a) **Technical bid** will consist of appendix-'A' and appendix -'B' which will contain the following :-
 - (i) Acceptance of terms and conditions by the vendor – Appendix-'A'.
 - (ii) Specifications required/offered by the vendor – Appendix -'B'.
 - (iii) Proof of min 05 established service centres located in Kolkata and other major cities of West Bengal along with details of individuals with address of the service centre and contact numbers of the persons be given in a separate Sheet. Tender received without the details will be rejected. The contact addressees of the service centres may be checked/physically verified by the purchasers i.e **South Asian Forum for Environment**. If the same are not found valid the tender will declared invalid.

(iv) Performance statement of supplying at least Fifty Numbers (50 nos.) RO Plants for last three years of all orders above Rs.2 lakhs value supplied (at least 3 Supply order/Purchase order) to Govt organizations. It is necessary that photocopies of such supply orders be attached. Tender received without these photocopies will be deemed incomplete and declared invalid.

(v) In addition, the following documents will also be submitted along with the technical bid :-

(aa) PAN Number and photocopy of PAN Card.

(ab) Latest Sales Tax clearance certificate from the competent authority as applicable.

(ac) Financial Stability Certificate during the current financial year from any commercial Bank mentioning the approximate value up to which tenderer is capable to run contracts. Also copy of Bank Transactions from the same Bank of last financial year to be enclosed alongwith.

(ad) Any alteration made in the tender before submission must be signed by the tenderer failing which the tender will not be considered.

(ae) Photocopy of Vat and CST registration certificates to be attach.

(b) Commercial / Cost bid will consist of appendix 'A' and appendix 'B' which will contain the following :-

(i) Commercial / Cost bid – Appendix –'B'.

(ii) The Commercial / Cost bid should contain the complete financial aspects quoting cost of items considered essential. Optional items, important spares recommended should be quoted separately. Total net cost must be indicated. Details of sales tax, excise duty, freight, toll tax etc as applicable must be quoted separately. Prices as quoted in Commercial bid will be valid for 90 days from the date of opening of tender.

6. Both the above mentioned covers should be sealed separately and super-scribed with the Tender No and date of tender opening. These covers should thereafter, be kept in a third cover and again sealed. This cover should also be super - scribed with the Tender No and Date of Tender Opening.
7. Only the Technical bid will be opened on the date of tender opening. Cost bid of only those firms whose technical bids have been approved will be considered for opening.
8. Firms should clearly indicate additional charges, if any, which they intend to add as extra along with the present rates thereof.

Bid Security / Earnest Money Deposit and Performance Guarantee / Security Deposit

9. Bid Security / Earnest Money Deposit:

The tender should be accompanied with earnest money of 2% of Total Value of Tender duly pledged in favour of South Asian Forum for Environment (SAFE). Non submission of earnest money as specified will render a tender invalid. The bid security will be accepted in the form of Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque. The above earnest money should be valid for 135 days from the date of tender opening.

10. Refund of Bid Security / Earnest Money of Bidders:

Bid securities of the unsuccessful bidders will be returned after the expiry of the 30th day after the award of the contract. The Bid Security of the successful bidder will be returned, without any interest whatsoever, after the receipt of Performance Security from them as called for in the contract.

11. Forfeiture of the Bid Security/ Earnest Money:

The bid security/earnest money will be liable to be forfeited if the bidder withdraws or amends, impairs or derogates from the tender in any respect within the validity period of his tender. Further, if the successful tenderer fails to furnish the required performance security within the specific period, its EMD will be forfeited.

12. **Performance Guarantee /Security Deposit:**

(a) The Vendor shall furnish a Performance Guarantee equal to Ten percent (10%) of the total value of the contract within ten days on the receipt of offer letter / Tender Notice in form of Fixed Deposit Receipt in favour of **South Asian Forum for Environment**.

(b) The Performance Guarantee/Security Deposit will be valid for six months beyond the date of expiry of warranty period. In case of non-adherence to the delivery schedule as given in the Tender for all deliverables of the items/systems liquidated damages as given in the Tender will be deducted from this amount.

13. **Forfeiture of Performance/Security Money:**

In the event of contractor failing to perform his part of the contract to the satisfaction or in case he disregards any terms and conditions of tender notice/work order, the contractor shall be liable to any or all of the following actions:-

- (a) Forfeiture of Performance/Security Money in whole or part.
- (b) Make good the loss caused through inability, neglect or delay to comply with any demand.
- (c) Cancellation of the contract without any prior notice.

14. **Warranty:**

The equipments should be covered with min warranty of **two year onsite warranty** for the equipment against any defect of workmanship and materials from the date of Final inspection at consignee location. During this period of warranty, if any defect is found, the firm shall be bound to repair/make good/provide replacement of the same at consignee's location at their own risk and expenses except items of a consumable nature. Items of Consumables nature will be stated by the Vendor in his quote. SAFE may invoke the fixed deposit in case vendor fail to ensure rectification of defects within one week of the defect being intimated to you. Vendor will ensure 100% equipment/systems availability, during the warranty period

15. **Conditions During Warranty:**

The vendor should fulfill the following conditions during the guarantee /warranty :-

- (a) Any failure in the system/equipment or a subsystem thereof should be rectified within a maximum period of **7 days** of lodging a complaint.
- (b) If the system/equpts is down beyond **7 days**, penalty at the rate of Rs 500/- (Rupees five hundred only) per day per system will be charged or recovered out of the Performance Security deposit held towards warranty.
- (c) Any system/equipments failing at sub-system level three times within a period of three months or displaying chronic faulty behavior or manufacturing defects or quality control problems will be totally replaced by the vendor at his risk and cost within 15 days of being intimated pending which repair / replacement will be carried out through a third party. The payment for such repair /replacement will be deducted from performance security deposit or will be paid by Vendor as found necessary.

Instruction to Bidders

16. **Instruction to Bidders.** The broad instructions for the prospective bidders are as follows:-

- (a) **Eligibility.** A firm registered with any Procurement/Registering Authority for the manufacture/supply of the tendered goods/services would be eligible to bid..
- (b) **Clarification regarding contents of the Bidding Documents.** A prospective bidder who requires clarification regarding the contents of the bidding documents shall notify the purchaser in writing and the purchaser will respond in writing to the clarifications sought not later than five days prior to the date of opening of the tenders.
- (c) **Quotations to be submitted under original memos.** Bids should be forwarded by vendors under their original memo / letter pad, inter alia, furnishing the TIN No., VAT/ CST No., Bank Address with EFT account No. and IFSC Code along with the complete postal and e-mail address of the firm..
- (d) **Amendment of Bidding Documents.** At any time prior to the date of submission of bids the purchaser may, whether at his own initiative or in response to a clarification requested by a prospective bidder, may modify bid documents by amendments. The amendments shall be notified

in writing to all prospective bidders. In order to afford prospective bidder a reasonable time to take the amendment into account in preparing their bids, the purchaser may, at his discretion, extend the deadline for submission of bids.

(e) **Bid Validity.** A bid shall remain **valid for 90 Days (Ninety days)**, unless otherwise specified, from the date of the opening of the tender. A bid valid for shorter period can be rejected by the purchaser, as being nonresponsive.

(f) **Late Bids.** Any bids received late or after the specified date and time for opening of tenders will not be considered and returned unopened to the bidder.

(g) **Modification and Withdrawal of Bids.** A bidder may modify or withdraw his bid after submission provided that the written notice of modification or withdrawal is received by the purchaser prior to deadline prescribed for submission of bids. A withdrawal notice may be sent by fax but it should be followed by a signed confirmation copy to be sent by post and such signed confirmation should reach the purchaser not later than the deadline for submission of bids. No bid shall be modified after the deadline for submission of bids. No bid may be withdrawn in the interval between the deadline for submission of bids and expiration of the period of bid validity specified. Withdrawal of a bid during this period will result in Bidder's forfeiture of bid security.

(h) **Clarification regarding contents of the Bids.** During evaluation and comparison of bids, the purchaser may, at its discretion, ask the bidder for clarification of his bid. The request for clarification will be in writing and no change in prices or substance of the bid shall be sought, offered or permitted. No post bid clarification on the initiative of the bidder shall be entertained.

(j) **Agents of the supplier.** One agent cannot represent two suppliers or quote on their behalf in a particular tender enquiry. Such quote should be rejected.

17. **Compensation.** The successful tenderer will be intimated by a letter of acceptance of his/her/their tender by the Chair, South Asian Forum for Environment. Till then no tenderer has any right to assume that his/her/their tender has been accepted and if any tenderer disregards this warning and makes any arrangements or ensure any expenditure in anticipation of issue of letter of acceptance, he/she/they will have no claim whatsoever for any compensation at a later stage.

Delivery

18. **Delivery.** The stores are considered to have been delivered only when these are handed over to the consignee after due inspection by the designated inspecting agency.

19. **Correctness of the Quality and Quantity.** On receipt at the consignee's premises, the stores will be checked for ascertaining the correctness of quantity, quality and documents. In case the stores are found deficient in any way, the consignee has the right to reject the stores.

20. **Failure to deliver within the DP.** When the supplies do not materialize by the stipulated contract delivery date, the purchaser has the option of:-

- (a) Extending the delivery date with imposition of LD and denial clause, which implies denial of increase in price, taxes, duties, etc. taking place during the extended period.
- (b) Re-fixing the delivery date.
- (c) Canceling the contract and repurchasing the non-supplied quantity.

21. **Delivery period: 30 days** from the date of issue of Supply Order. Equipments will be delivered at SAFE Project Site Office, Kalikapur Unnyan Samiti, Youngstar Club Premises, opposite ABHISHIKTA, ward No 109.

22. **Inspection.** The equipment will be inspected by a board of officers at the consignees end as per existing procedure of SAFE.

Payments

23. **Advance Payments.** No advance payment(s) will be made.

24. **Payment.** The terms and conditions of the payment will be as under:-

(a) 75% will be made within 60 days on completion of supply of contracted quantity in full and in good conditions subject to checking and acceptance by the authorities so detailed for this purpose by the Chair South Asian Forum for Environment or his authorised representative. The decision of Chair, South Asian Forum for Environment will be final. No advance payment will be entertained in any circumstances.

(b) Balance 25% payment will be made on successful completion of Installation and Training at consignee location. Installation and Training of the equipment will be completed within 30 days of delivery by the firm under its own arrangement. Installation / working correctly and any electric/water connection to be given by the firm.

25. **E-payments.** It will be mandatory for the suppliers/vendors to indicate their bank account numbers and other relevant e-payment details so that payments could be made through ECS/NEFT/RTGS mechanism instead of payment through cheques.

26. **Liquidated Damages (LD)** In case of delay in supply, the liquidated damages will be recovered from the supplier @ 0.5% of the price of stores which the contractor has failed to deliver within the period agreed for delivery of the contract for each week or part thereof during which the delivery of such stores may be in arrears, where delivery thereof is accepted after expiry of the aforesaid period, subject to maximum of 10% of the contract value of undelivered stores.

27. **Token Liquidated Damages.** In case of circumstances beyond the control of the vendor at the sole discretion of the purchaser, Token Liquidated Damages up to 10% of the normal Liquidated Damages may be imposed by the Competent Financial Authority. The circumstances which allow token LD to be imposed will be decided on case to case basis by the competent financial authority and his decision shall be final.

28. **Method of Payment LD.** The amount charged as liquidated damages shall be deducted by the customer from the amount due for payment to the vendor. If the amount of such LD exceeds the payments due to the vendor, the vendor shall within 30 (thirty) days make payment to the customer in full for final settlement of claims failing which the Performance Guarantee will be encashed to make good the amount exceeding the payments due to the vendor.

29. **Guidelines for levying of LD.** The following guidelines would be followed while taking decision for imposition of LD:-

| Ser No | Circumstances | Quantum of LD |
|--------|--|---|
| (a) | Delay in supplies resulted in actual/demonstrable monetary loss and the Supplier was responsible for the delay | Full LD as per the provisions of paragraph 27, subject to the LD not exceeding 10% of the value of the contract |
| (b) | Delay in supplies resulted in actual/demonstrable monetary loss but the Supplier was responsible only for a part of the delay and the remaining part was beyond Supplier's control | Full LD for the period for which the Supplier was responsible for the delay, subject to the LD not exceeding 10% of the value of the contract |
| (c) | Delay in supplies resulted in actual/demonstrable monetary loss but the entire delay was due to circumstances beyond the control of the Supplier | LD may be waived in full |
| (d) | Actual/demonstrable monetary loss cannot be certified and no inconvenience has been caused | LD may be waived in full |

30. **Waiver of LD.** Liquidated damages may be waived in full or part, as per the guidelines contained in the preceding paragraph, with the approval of the CFA and the concurrence of the IFA.

31. **Evaluation of the Proposal (Technical and Financial).** A three stages procedure will normally be adopted:-

(a) **Stage-I.** Evaluation of Technical Bids to assess their suitability against the laid down QR's. Tenderers MUST ensure that they enclose all original technical literature and detailed documentary proofs which specifically bring out the compliance of the equipment being offered against the QRs/specifications. In case it is not possible to verify compliance of equipment offered due to lack of adequate documents no reference will be made to tenderer & the bid will not be considered further. Consequently, if bids are received without the technical literature/brochure the bid will be rejected. Hence it is in the tenderers interest to include all relevant and detailed technical data with their bid.

(b) **Stage-II** At the purchaser's discretion, Ocular Verification / Physical evaluation of the stores found meeting the QRs in technical evaluation will be done to verify the compliance of the equipment with the laid down QR's. The tenderers will have to give such opportunities **on no cost no commitment basis** at a location specified by the purchaser. In case of imported stores, no assistance whatsoever will be provided by the purchaser in any matter whatsoever and it will be the tenderers responsibility to submit the samples on the appointed date, time and place. No requests in any manner whatsoever shall be entertained in this case. At the discretion of the purchaser Stage I and II may be combined.

(c) **Stage III.** Financial Evaluation of the Proposal - The price bids of only those stores found acceptable in the technical offer and ocular verification/trial shall be opened/evaluated and considered further.

Other Misc / General Conditions

32. **Option Clause.** This Tender Notice has an Option Clause, wherein the Buyer can exercise an option to procure an additional 50% of the original Tender Noticed quantity in accordance with the same terms & conditions of the present Tender Notice. This will be applicable within the currency of Supply, at the discretion of the purchaser before placing the final Tender Notice.

33. **Repeat order.** This Tender Notice has a Repeat Order Clause, wherein the Buyer can order up to 100% quantity of the items under the present Tender Notice within six months from the date of successful completion of this Tender Notice, cost, terms & conditions remaining the same. It will be entirely the discretion of Buyer to place the Repeat order or not.

34. **Fall Clause.** If vendor undertakes identical works/supplies identical items in other ministries/ departments at the rates lower than the rates approved by the department, he will have to charge at those rates from this organization.

35. **Fore Closure.** South Asian Forum reserve the right to fore close the order after giving a notice period of one month in case the tenderer is unable to supply the same.

36. **Force Majeure.** Should any Force Majeure circumstances arise, each of the contracting party shall be excused for the non-fulfillment or for the delayed fulfillment of any of its contractual obligations, if the affected party within 07days of its occurrence informs the other party in writing. Force Majeure shall mean fires, floods, natural disasters or other acts, that are unanticipated or unforeseeable, and not brought about at the instance of the party claiming to be affected by such event, or which, if anticipated or foreseeable, could not be avoided or provided for, and which has caused the non-performance or delay in performance, such as war, turmoil, strikes, sabotage, explosions, quarantine restriction beyond the control of either party. A party claiming Force Majeure shall exercise reasonable diligence to seek to overcome the Force Majeure event and to mitigate the effects thereof on the performance of its obligations under this Tender Notice.

37. **Specification.** The Seller guarantees to meet the specifications as per Appendix 'C' of this Tender Notice and to incorporate the modifications to the existing design configuration to meet the specific requirement of the Buyer Services as per modifications/requirements recommended if any. All technical literature and drawings shall be amended as the modifications by the Seller before supply to the Buyer. The Seller, in consultation with the Buyer, may carry out technical up gradation/alterations in the design, drawings and specifications due to change in manufacturing procedures, indigenization or obsolescence. This will, however, not in any way, adversely affect the end specifications of the equipment. Changes in technical details, drawings repair and maintenance techniques along with necessary tools as a result of up gradation/alterations will be provided to the Buyer free of cost within 30 days of affecting such up gradation/alterations.

38. **Arbitration.** In the event of any question dispute or difference arising under these conditions or any special conditions of contract, or in connection with this contract (except as to any matters the decision of which is specifically provided for by these special conditions), the same shall be referred to the Sole Arbitration of the Chair, South Asian Forum for Environment or some other person appointed by him. The tenderers submitting the tenders shall render a certificate to have agreed to this clause.

39. **General.** The tender should be submitted in accordance with the above Clauses failing which tender will be rejected at the sole discretion of Chair, South Asian Forum for Environment. The Chair, South Asian Forum for Environment also reserves the right to accept any tender in whole in a part, reject any tender or all tenderers without assigning any reasons whatsoever or to carry out negotiation with the tenderers in the manner considered suitable in the best interest of state. The approved tenderer will have to abide by all the terms and conditions of this tender notice and same will remain in force during the currency of the contract.

40. In case of any query, the following officers can be contacted at their office telephone number indicated below :-

Mr Chiranjee Chatterjee 9007059500 Email: office@safeinch.org

TO BE SUBMITTED ALONG WITH TECHNICAL BID

Appendix –A (Refers to Para 5 (a)(i) of Tender Enquiry)

ACCEPTANCE OF TERMS AND CONDITIONS BY THE VENDOR

We hereby agree to all the terms and conditions as given in Tender Notice No. Tender Notice No: SAFEKOL/TN14/CSR0A/Notice1; Dated: 18.03.2014

Company Seal

(Authorised Signatory of Company)

Place : _____

Date : _____

APPENDIX C: DETAILS OF SPECIFICATIONS

Section – A:

Technical Specifications for Reverse Osmosis Water Treatment Plant

System Operating Data :

No. of streams : One
 Mode of operation : Automatic with digitized dispensing unit(s)
 Feed flow rate : 2000 LPH
 Permeate flow rate : 1000 LPH
 Concentrate flow rate : 1000 LPH
 Min. System recovery : 50 %

Limiting conditions for RO feed water

Turbidity : < 5 NTU
 COD : < 10
 BOD : < 5
 Iron : < 0.3
 Fluoride : < 1
 SDI : < 5
 Free chlorine : Nil

| Equipment | Specifications | Make | Qty |
|--------------------------|--|-----------------------------------|------------|
| Raw Water pump | Type: Centrifugal Monoblock MOC: CI Motor Rating: 0.75 HP | KBL | 1 |
| Micron Cartridge Filter | Capacity: 2000 LPH MOC of Housing: ABS MOC of Cartridge: PP Filter Rating: 5 micron Size: 20" long | | 1 |
| DMF VESSEL | 16 x 65 | Pentair / Wave | 1 |
| Automated MPV | 25 NB MPV Automatic Backwash facility with Display | Initiative | 2 |
| DMF | Media | | 1 |
| CF HOUSING | 20" long. MOC : ABS | Pratham | 1 |
| CF ELEMENT | 20" long, 5 micron, spun. | Pratham | 1 |
| Anti scalant Dosing Pump | Capacity: 1.5 LPH @ 4 bar, MOC: HDPE | Initiative | 1 |
| Anti scalant Dosing Tank | Capacity: 50 lt | Sintex | 1 |
| High Pressure Pump | Capacity: 2000 LPH Type: Vertical, Multistage, Centrifugal MOC: SS304 Discharge Capacity: 2 m ³ /hr @ 12 kg/sq.cm Power Rating: 2.2 kw | Nanfang/ Dharini/ Kirloskar | 1 |
| PR TUBE | FRP 250 psi Suitable for 4" x 120" 3 element long. | UKL/ Pratham | 2 |
| Membranes | Type: 4"x40" Osmonics Membranes Spiral Wound | Ultramare/ Hydronautics | 4 |
| Skid | MS Powder coated | Wwings | 1 |
| ROTAMETER PERMEATE | 1200 lph Polycarbonate, Panel mount. 1/2" conn. | Aster | 1 |
| ROTAMETER REJECT | 2400 lph Polycarbonate, Panel mount. 1/2" conn. | Aster | 1 |
| Electronic Control Panel | With built – in conductivity display, Remote Monitoring with control through software. Antenna attached. | Initiative | 1 |
| PR GAUGE BRASS | 0-7 kg/cm ² 63mm dial, Brass. Bottom | Febic | 2 |

| | | | |
|--|---|---------------|-------------|
| | entry | | |
| PR GAUGE SS | 0-16 kg/cm2 SS body, Brass internals, Panel mount | Wika | 3 |
| Interconnecting piping | UPVC | Astral / Jain | 1 |
| HPP disg. Valve | 1" ball valve | Zac / Astral | 1 |
| BALL VALVE at reject | 1" ball valve | Zac / Astral | 1 |
| BALL VALVE sample | 1/4" SS-316 | Jain | 2 |
| PH Dosing pump | 3 LPH Dosing pump | Filtra | 1 |
| Dosing tank | 50 Lt. | Sintex | 1 |
| FLOATY | for Raw & Treated tank, Double point contact | Aster | 2 |
| LPS | 0.5 to 5.0 kg/cm2 | Aster | 1 |
| HPS | 5 to 15 kg/cm2 | Aster | 1 |
| UV System | 1000 lph, Housing -SS316 | Sukrut | 1 |
| Automated Dispensing Unit & Card Recharge Unit | Wall Mounted – Auto SV, Software Operated | Initiative | 2 |
| RFID Cards | Microchip enabled plastic cards (printed) | Initiative | As required |

Schedule Of Exclusions

- All civil work like foundation of equipment, drain trenches, shed, supporting structure
- All interconnecting piping beyond our termination points
- Provision of cleaning skid.
- Storage tank for raw water, treated water
- Electrical cable to our control panel
- Unloading of machine at site, site storage and security of equipment
- Illumination / ventilation of plant area.
- Consumables for commissioning & routine operation
- Any other item which is not specifically mentioned in our scope of supply.

Termination Points

- Inlet of raw water pump
- Concentrate outlet of RO on skid
- Drain of Sand filter / carbon unit on skid
- Permeate outlet on RO skid
- Inlet connection to the control panel

Section – B:

Technical Specifications for Solar Solution for 1000 lph System

(7.50 kWp +/- 5% Solar Power Plant)

| Sl. No | Description | Configuration | Quantity | Unit | Make |
|--------|--------------------------------------|-----------------------------|-------------------|------|-------------------------|
| 1 | PV Modules, 250Wp | 250Wp, Polycrystalline cell | 30 | Nos | Kotak or Equivalent |
| 2 | Array Junction Box | 4 strings in parallel | As per the design | Nos | Alltronix or Equivalent |
| 3 | Module Mounting structure | MS 80 micron | 1 | Set | Kotak or Equivalent |
| 4 | Power Conditioning Unit(PCU) | 8 kVA | As per the design | Nos | Kotak or Equivalent |
| 5 | Deep Cycle Low Maintenance Batteries | As appropriate | As per the design | Nos | Southern or Equivalent |
| 6 | Cables & Other Accessories | As appropriate | As per the design | Nos | Kotak or Equivalent |

Component Specifications

Solar PV Module

| | |
|------------------------------|--|
| Module Technology | Poly(Multi) Crystalline |
| Module Rating | 250Wp ± 5% at STC & 135 Wp ± 5% at STC |
| Number of Modules | As per requirement* |
| Product Standard | IEC 61215, IEC 61730, CE |
| Mechanical Dimensions/Weight | As per the Data Sheet Attached |

- *The Module Rating provided is tentative. It is subject to change depending on the availability and site conditions*

Module Mounting Structure

| | |
|----------|--|
| Material | Hot Dip Galvanized Mild Steel (MS) with 80 micron coating |
| Type | Fixed Axis, Welded Structure |
| Design | Maximum Wind Speed- 150 Km/hr. As per site requirement a separate drawing will be made upon confirmed Order. |

Array Junction Box

| | |
|--------------------|---|
| Material | ABS/FRP |
| Ingress Protection | Water Proof |
| Safety | Fuse, Ground bolt of suitable rating. The drawings will be provided upon confirmation of the order. |
| Rating | As per site conditions and modules selected |

Protection

| | |
|------------|--|
| Grounding | As per Standards |
| Lightening | As per Standards |
| Material | Copper/Aluminum/GI conductor with earth pit. |

Electric Switchgear

The term switchgear, used in association with the electric power systems, or grid, refers to the combination of electrical disconnects, fuses and/or circuit breakers used to isolate electrical equipments. Switchgear is used both to de-energize equipment to allow work to be done and to clear faults downstream.

One of the basic functions of switchgear is protection, which is interruption of short-circuit and overload fault currents while maintaining service to unaffected circuits. Switch gears also ensure the trouble free isolations of the equipments. Switchgear also is used to enhance system availability by allowing more than one source to feed a load. In this proposal the circuit breaker for grid disconnection and for module disconnection are provided as part of the Power Conditioning Unit.

Grounding

All grounding is done as per IS 3043 standards. The complete earthing system is electrically and mechanically connected to provide an independent return path through earth. All three phase equipments are provided with proper earth connections and all DC grounding from the array junction boxes are made separately to an earth.

Lightning Protections

| | |
|--|---------------------------------|
| Material | Stainless steel and Epoxy resin |
| Radius of Protection PDC 3.3/OPR 30 | 45 m/48 m |
| Protection Level | I |
| External Power supply | Not required |
| Applicable standards | UNE 21.186 NFC 17-102 |

Section – C: Service Specifications

Minimum no of Service Person in Kolkata: 500

Minimum no of Service Center in Kolkata: 100

Minimum no of Service Center in India: 1300

Frequency of Service Visit: On Monthly basis

Software Enabled Central Service Monitoring System: Available

Maximum Service Downtime: 24 Hrs.

Availability of Warehouse and Spares in Kolkata: Available

Section – D: Credentials

Company Turnover: Minimum INR 1500 Crores

No. of Projects completed (not less than 1000 LPH RO Plant): Not Less than 50

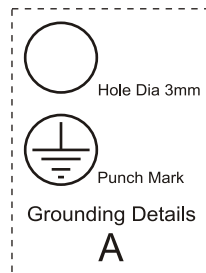
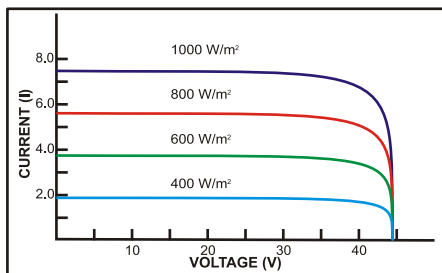
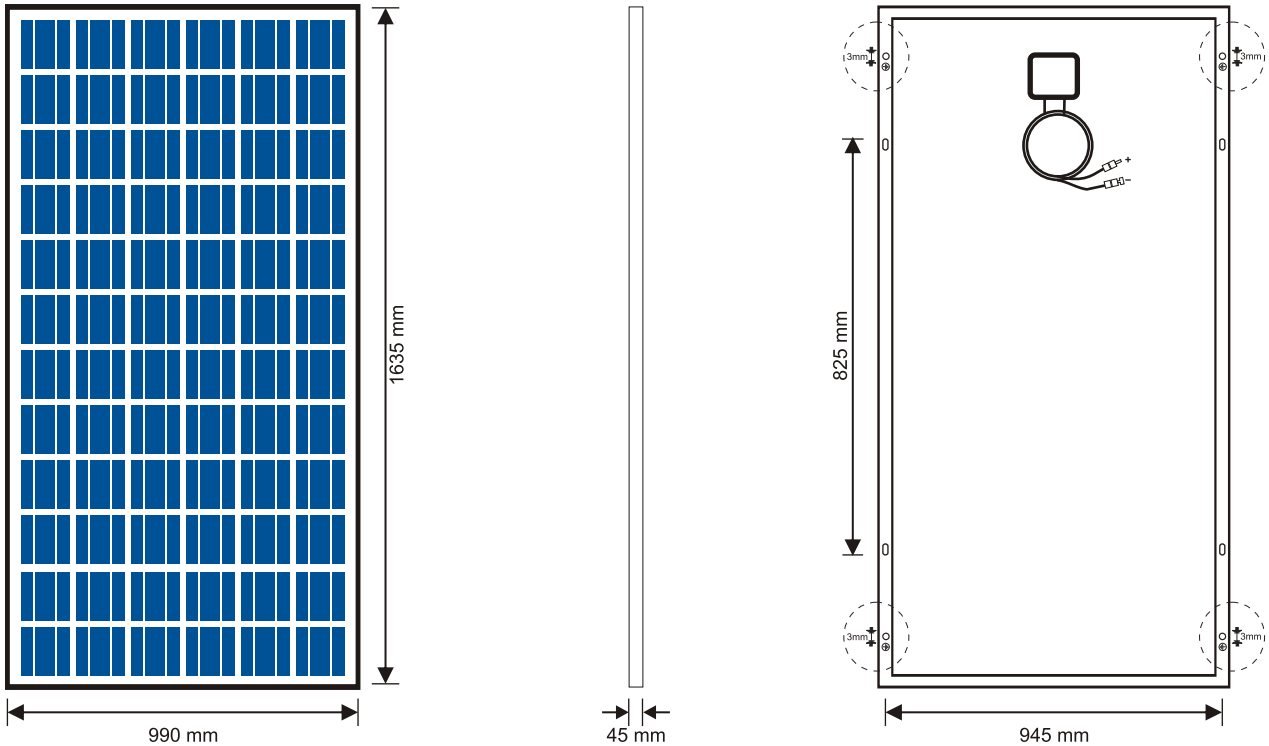
Company's Presence in Water Treatment Sector: Minimum 20 years

DETAILS OF AVERAGE INPUT WATER QUALITY

| | |
|---|--------------|
| <u>INPUT WATER QUALITY: Site report of Kalikapur</u> | |
| TDS: | 970.0 mg/lit |
| pH: | 8.1 |
| Turbidity: | 4.0 NTU |
| Total Hardness: | 699.0 mg/lit |
| Chloride: | 276.8 mg/lit |
| Total Iron: | 0.80 mg/lit |
| Silica: | 20.3 mg/lit |

SOLAR MODEL SPECIFICATIONS

SOLAR MODULE - 250 Wp



| Temperature Coefficients | |
|---|-----------|
| NOCT | 48°C±2°C |
| Current Temperature Coefficient α (I _{sc}) | 0.09%/°C |
| Voltage Temperature Coefficient β (V _{mp}) | -0.34%/°C |
| Power Temperature Coefficient λ (P _{max}) | -0.37%/°C |

| Electrical Specifications | | |
|--------------------------------|---------------------|-----------------------|
| Open Circuit Voltage | (V _{oc}) | 44.56 V |
| Short Circuit Current | (I _{sc}) | 7.29 A |
| Maximum Voltage | (V _{mp}) | 37.15 V |
| Maximum Current | (I _{mp}) | 6.73 A |
| Maximum Power at STC | (P _{max}) | 250 Wp |
| Maximum System Voltage | | 600 V |
| Operating Temperature/Humidity | | -40° C to +85 C / 85% |

| Module Information | | | |
|-----------------------|------------------------------------|-------------------|---------------------------|
| Solar Cell | : Multi Crystalline | Oblong Hole | : 9 x 13mm |
| Solar Cell Shape | : Full Square | Terminal Box | : IP 65 |
| Colour Class of Cells | : Blue (Bright or Medium or Dark) | Bypass Diode | : 20A, 1000 V |
| Cell Geometry | : 156mm x 130mm | Cable & Connector | : 4mm ² & MC4 |
| Cell Configuration | : 72 Cells in Series | Frame Material | : Anodized Aluminium |
| Module Dimensions | : 1635mm x 990mm x 45mm | Frame Type | : Crimped Ends |
| Module Weight | : 18.5 Kgs. Approximate | Packing Method | : Pallet type plywood box |

Compliances Sought

