

**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY,
BHUBANESWAR**

Invites Tender

For

**Design, Supply, Installation and commissioning of SPV Energized
Water Chilling System with RO Plant at 5 locations at Angul district.**

Date of release of bid	20.10.2017
Pre-bid conference to hold at OREDA	02.11.2017 at 11.30 AM
Revised & final online bid document	03.11.2017
Date and time of last submission online	18.11.2017 at 5.00 PM
Date and time of submission of hard copy of documents.	20.11.2017 at 1-00 PM
Opening of Techno-commercial bid (Part-I) at OREDA	20.11.2017 at 3-30 PM
Date of opening of the price bid(part-II)	To be informed to the qualified bidders.

**E-Tender Call Notice- 3809 / OREDA
Dt- 18.10.2017**

S-3/59, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR-751010
Phone : (0674) 2585898,2581552,2580554. Fax:2586368
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Disclaimer

Kindly Note:

1. *This document is not transferable*
2. Though adequate care has been taken for preparation of this document, the bidder shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any bidder on the pre bid meeting or within ten days from the date of issue of the bid document, it shall be considered that bid document is complete in all respects and has been received by the bidder.
3. The Odisha Renewable Energy Development Agency (OREDA) reserves the right to modify, amend or supplement this bid document keeping in view the necessity in implementation of the scheme.
4. While the bid has been prepared in good faith, neither OREDA nor their employees or advisors make any representation, warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability and completeness of this bid document, even if any loss or damage is caused by any act or omission on their part.

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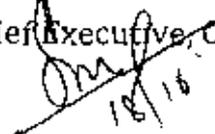
NOTICE INVITING E-TENDER NO: 3809 / OREDA DTD 18-10-17
VII/335/SI-32/17

ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY invites sealed e-tenders in **two part bidding system** from registered manufacturer, system. integrator, EPC firms for Supply, Installation (Erection), Testing, Commissioning, Warranty and Comprehensive Maintenance Contract years for SPV Energized Water Chiller with RO Plant at various locations at Angul district

Date of release of bid	20.10.2017
Pre-bid meeting conference to hold at OREDA	02.11.2017 at 11.30 AM
Revised & final online bid document hoisting	03.11.2017, 5.00 P.M.
Date and time of last submission online	18.11.2017 at 5.00 PM
Date and time of submission of hard copy of documents.	20.11.2017 at 1-00 PM
Opening of Techno-commercial bid (Part-I)	20.11.2017 at 3-30 PM
Date of opening of the price bid(part-II)	To be informed to the qualified bidders.

Interested prospective bidders may visit OREDA's website www.oredaorissa.com and www.tenderwizard.com/OREDA for details relating bidding process and all other terms and conditions. The bidders can view the tender documents from www.oredaorissa.com website free of cost. Amendments if any will be published in the OREDA website only. No further notification will be made in the news paper.

Chief Executive, OREDA

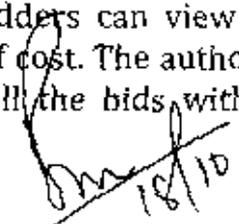

18/10

DETAIL OF NOTICE INVITING TENDER

ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY invites sealed e-tenders in **two part bidding system** from registered manufacturer, system integrator, EPC firms for Supply, Installation (Erection), Testing, Commissioning, Warranty and Comprehensive Maintenance Contract of Design, Supply, Installation and Commissioning of SPV Energized Water Chiller with RO Plant at various locations at Angul district.

Particulars	Estimated Cost (Rs.)	Earnest Money Deposit (Rs.)	Tender processing fee Non refundable (in Rs.)	Non refundable Cost of Bid document	Last date/time for submission of bids	Date and time of opening of bid
Supply, installation, commissioning including warranty and Comprehensive Maintenance Contract for a period of 5 year of Solar Modules of 2 kwp capacity, Module mounting structure, Junction boxes, Power conditioning unit (PCU), Cable and other accessories, Earthing & Protection, RO water purifier, Water chillers system, Water discharge as per the technical specification(MNRE/ IEC /BIS), schedule of materials and terms and condition of the of the work award from time to time on the basis of the lowest price arrived at within a period of minimum one year of the valid tender under the scope of work	5 sets, Rs.19,00,000; likely to enhance	20,000	2300 or as admissible	Rs. 10500/-	Online 5.00 PM on 18.11.2017 Hard copy 1.00PM on 20.11.2017	3-30 PM on 20.11.2017

Interested prospective bidders may visit OREDA's website www.oredaorissa.com and www.tenderwizard.com/OREDA for details relating bidding process and all other terms and conditions. The bidders can view the tender documents from www.oredaorissa.com website free of cost. The authority reserves the right to accept / reject any part thereof or all the bids without assigning any reason.


 Chief Executive, OREDA

SECTION-II

SUBMISSION OF ONLINE BIDS:

A. MODE OF SUBMISSION OF BID:-

- i) The bidder shall submit the bid in Electronic Mode i.e. in **www.tenderwizard.com/OREDA** portal. The bidder must ensure that the bids are received in the specified website of the OREDA by the date and time indicated in the Tender notice.
- ii) Bids submitted by telex/telegram will not be accepted.
- iii) The OREDA reserves the right to reject any bid, which is not submitted in electronic mode and according to the instruction, stipulated above.

(A-1) PARTICIPATION IN e-TENDER:-

ACQUISITION OF DIGITAL SIGNATURE CERTIFICATE

- i) For all the users it is mandatory to procure the Digital Signatures of Class III only.
- ii) Contractors / Vendors / Bidders / Suppliers are requested to follow the following steps for registration.

(A-2) REGISTRATION IN TENDER WIZARD PORTAL

- i) Log in **www.tenderwizard.com/OREDA** Click "Register", fill the online registration Form.
- ii) Payment shall be made to KSEDCL, Bangalore for vendor registration in tender wizard portal in e-payment mode only.
- iii) As soon as the verification is done the e-tender user ID will be enabled/provided.

(A-3) ON-LINE REQUEST FOR e-Tender DOCUMENTS.

After viewing Tender Notification in **www.tenderwizard.com/OREDA** if bidder intends to participate in tender, he has to use his e-tendering User ID and Password which has been received after registration and acquisition of DSCs (Digital signature certificate). If any Bidder wants to participate in the tender he has to follow the instructions given below.

The bidder should fill up the Techno commercial and price schedule properly in the bid sheets provided in .xls format and up-load the same without changing the file name. The tender may be rejected if the schedule of price is submitted in incomplete form.

NB: The bid sheets (.xls file) shall be uploaded in www.tenderwizard.com/OREDA portal, prior to online closing of the tender. By no other means (except online) price bid shall be accepted for evaluation of tender.

- (i) After completing all the formalities, Bidders will have to submit the tender as specified in NIT and must take care of all instructions. Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.

Note down / take a print of bid control number once it displayed on the screen

- (i) Tender Opening event can be viewed online.
- (ii) Competitors bid sheets are available in the website for all participated bidders.

NOTES:

For any assistant, Contact:

E-Tendering help desk number: 080-40482000/121/133/140(Bangalore) OREDA Help Desk-09776823641/09937140591

(C) DEAD LINE FOR SUBMISSION OF BIDS

- i) Soft copy of the bid shall be uploaded through the portal www.tenderwizard.com/OREDA on or before the online submission time and date as stipulated in the bidding document. DD towards Tender cost, DD/BG towards Bid Security, tender processing fee acknowledgement & a set of all uploaded documents including uploaded Techno-commercial Bid must be received by OREDA at the address specified not later than the time and date stated in the tender notification.

SUBMISSION OF HARD COPIES OF THE BIDS AND SEALING AND MARKING:-

(A) Hard copies of the following items should only be submitted to OREDA

1. Demand draft towards "cost of bid document"
2. Copy of "acknowledgement of tender processing fee"
3. EMD in shape of "Demand Draft/ Bank guarantee"

4. Signed copy of "Confirmation to Technical Specifications"
5. Signed copy of "Certificate of Unconditional Acceptance of the tender"

6. Technical Bid document in **hard bound form** with each page legibly numbered comprising of the following:
 - ▣ Uploaded Techno-commercial Bid Sheet.
 - ▣ Technical Specifications of all materials to be supplied.
 - ▣ Valid VAT / Sales tax clearance certificate, Income Tax return, PAN card, Service Tax Registration Certificate.
 - ▣ Unconditional acceptance of all Terms and conditions.
 - ▣ Indignity Certificate, Organizational profile.
 - ▣ Certificate and proof as per qualification criteria.

(B) Technical bid:

The Electronic Form/Template of the bid for the Techno-Commercial bid, as available on the portal, shall be duly filled and scanned copies of documents in support of meeting the minimum qualifying requirement of the tender shall be given as attachments.

(C) Financial bid:

The Electronic Form/Template of the Price bid (as available on the portal) shall be duly filled in.

Any condition in regards to financial aspects, payments, terms of rebate etc beyond the prescribed financial terms of OREDA will make the bid invalid.

Therefore it is in the interest of the bidders not to write anything extra in the Price Bid except price.

ACCEPTANCE/REJECTION:

1. Program Background:

The development and implementation of a solar powered RO unit with cooling system will not only be of great benefit for communities in rural areas, but is also seen as a cost effective method of supplying potable water from raw sources in disadvantaged and or market areas. With addition to provide purified water along with water cooling system is an innovative move to avail *cold water for drinking purpose in areas of extreme weather conditions where summer atmospheric temperature reaches above 40 degree C.*

The decision was made to develop a pilot demonstration unit to evaluate the feasibility of the combined technologies; as well as the operation, application and commercialisation in the local market. *The concept is relevant to areas where small communities are spread over large areas, where the high cost of erecting large water treatment water, or alternatively the piping of fresh water from other sources, is not practically viable. The use of solar panels, which generate the power required to drive the RO unit & Cooling Unit constitutes an initial capital investment that can be offset over the lifetime of the unit. Results gained from the test runs with the demonstration unit will significantly contribute toward the optimisation of future units and plants of increased capacity.*

UNDERTAKING BY THE BIDDER

I/we here by undertake that

1. *We have thoroughly read and examined the notice inviting tender and the tender document along with all its schedules, annexure etc.*
2. *The rates quoted by us are firm and final and are meant for execution of the allotted supply / installation within the time frame stipulated in the tender/supply / installation order.*
3. *All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of one year from the date of opening of the technical bids.*
4. *In case our tender is incomplete in any respect or we violate any of the prescriptions given in the tender for submission of the same OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the earnest money deposited by us.*
5. *In case of award of supply / installation in our favour OREDA shall have the right to convert the EMD deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of work order.*
6. *In case we fail to commission the allotted numbers of Water Coolers as per the time schedules given by OREDA or fail to fulfill any of the terms and conditions given in the tender OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the above security deposit made by us against award of work order..*
7. *I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the supply / installation as secret/confidential and shall not communicate information derived there-from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudiced to the safety of OREDA/the State Govt.*
8. *I/We shall abide by all the laws prevailing at the time of the execution of the supply /installation and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.*
9. *I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize OREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.*

Signature of bidder with
stamp

Dated

2. Scope of Work:

- a) Broad scope of the works is installation of solar PV powered water chilling plant with RO systems per technical specification including all civil and safety arrangement as per following schedule of works.

Sl no	Schedule of works	Capacity	Warranty
1	Solar PV power supply systems with all accessories of PCU and control as per MNRE specification	2 kwp	5 years
2	RO water purifier system	1 hp as per technical specification	1 year
3	Water Chilling Plant	1hp as per technical specification	1 years
4	Installation and commissioning with all required plumbing works	Connecting to existing solar dual pump	

- b) Bidders shall conduct site survey before submitting their bids.
- c) Bidder must start the work at site within 30 days from the date of issue of purchase order.
- d) Contractor shall make his own arrangement for safe storage of their as well as OREDA material at site.
- e) To co-ordinate with OREDA officials for verification of completed works along with all the required documentation.
- f) Materials, wherever supplied, shall be provided with fresh quality. Work man ship shall be neat & clean. In case of any observation by OREDA official regarding materials & workmanship, the same have to be replaced and/ or repaired to the satisfaction of OREDA official.
- g) Contractor shall arrange all the utilities required to complete the work. No payment on this account shall be paid by OREDA.
- h) Any other work as required on the site for completion of the project.
- i) The contractor shall furnish on first day of every week, a progress showing progress of finalization of designs and drawings, materials received at site and the works carried out during the preceding weeks and plan for the next week.
- j) Follow all recommended safety and security measures during installation and post installation works.

4. Instructions to Bidders

Intending bidders are requested to carefully study the instructions contained hereunder before preparing their bid documents for submission.

- a. A Bidder shall submit a single offer-bid only.
- b. *Bids must be submitted in English language only.*
- c. Incomplete, telegraphic or conditional bids shall not be accepted.
- d. Prices quoted must be firm and fixed. No price variation / escalation shall be allowed during process of completion of the project or for a period of *one financial year whichever is earlier.*
- e. The bidders must sign at the bottom of each page of the bid documents at the time of submission in token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.
- f. Valid GST submission document duly attested must be submitted along with the bid. **All rules and circulars of Finance Department, Govt. of Odisha issued from time to time will be applicable during project period from issue of tender to the completion of 5 years CMC period.**
- g. Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- h. The bidders should furnish the information on all past supplies and satisfactory performance.
- i. The bidder shall submit copies of documents defining the constitution or legal status, place of registration and principle place of business of company or firm or partnership.
- j. The bidder shall furnish a brief write up backed with adequate data, explaining capacity and experience (both technical and commercial) for the manufacture and supply of the required systems, equipments within the specified time of completion after meeting all their commitments.
- k. *The bidders shall submit reports on the financial standing of its company/firm such as auditor's reports, bankers' certificates etc.*

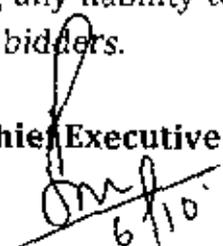
All supply / installation orders shall be placed with the state local registered office of the qualified empanelled bidders having valid Odisha TIN/ OVAT as per the FD circular no 5439 dtd 25.02.14.

- z) On award of contract the qualified bidder shall be termed as executing agency.

Acceptance/ Rejection of the bid documents:

Chief Executive, OREDA reserves the right to reject or accept any bid or annul the bidding process at any time prior to award of contract, without having prejudice of incurring any liability to the *affected bidders or any obligation to inform the bidders.*

Chief Executive



6/10

I/we have carefully read & understood the above terms & conditions of the bid & agree to abide by them.

**Signature of Bidder
with Seal**

The successful bidders must deposit a **bank guarantee** towards Security Deposit-cum-Performance Guarantee fees with the Chief Executive, OREDA, Bhubaneswar for the along with acceptance of work order as follows

7% of the order value for 1 year and 3% of the order value for 5 years in shape of two separate irrevocable Bank Guarantees **from the date of acceptance of the work order** till the completion of respective warranty and CMC period of the composite system.

The said deposit would be forfeited or BG invoked in part or full depending upon the significance of the performance or deficiency of services, if the supplies are not made and performances are not as per the Terms & Conditions of the purchase order. Every year the validity shall lapse with Warranty and CMC period discharged of the systems after commissioning of each system, subject to satisfactory execution / performance of the systems.

The solar module should be guaranteed on the performance as per the MNRE recommended technical specification. OREDA may at point of time get the performance test checked in any approved manner during period of guarantee. In case of deficiency of the same the whole lot of supply on that said order shall remain liable to be replaced. In case non adherence of quality, the executing agency shall be penalised suitably by the authority, besides, other measures of suspension, de-registration and blacklisting will be invoked.

All benefits as per the State Govt policies will be applicable for local eligible firms of the state only.

5.5 Work Execution Schedule:

Execution of work shall be carried out in an approved manner as outlined in the technical specification or where not outlined, in accordance with the relevant Indian Standard Specification, to the reasonable satisfaction of the Authorized OREDA Officer.

Upon intimation about commissioning of the systems by the vendor a joint inspection will be carried out by OREDA, representative of the sponsoring Govt. department/agency and the vendor.

After such inspection a Joint Commissioning Report (JCR) shall be taken out with signatures of all above officers as well as the concerned user which shall form a major document for release of payment.

5.6 Validity of offer:

The price bid offer must be kept valid for a period of one year from the date of opening of the technical bid. No escalation clause except the admissible tax component under the period of consideration would be accepted.

5.7 Tax return:

of the contract price for delayed goods or installation and commissioning. Once the maximum is reached (i.e. 5 weeks of delay) OREDA may consider termination of the contract and forfeit the security deposit without prejudice to the other remedies of the contract.

If at any time during the performance of the Contract the supplier should encounter conditions impeding timely delivery of the Goods and performance of the Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the OREDA shall evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of the Contract.

A delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of liquidated damages pursuant, unless an extension of time is agreed upon without the application of liquidated damages.

5.10 Termination for Default

The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract *in whole or in part*:

- if the Supplier fails to deliver any or all of the Goods within the period(s) specified in the Contract, or within any extension thereof *granted by the Purchaser*; or
- if the Supplier fails to perform any other obligation(s) under the Contract.
- If the supplier, in the judgment of OREDA has engaged in corrupt or fraudulent practices in competing for or in executing the contract.*

For the purpose of this clause:

"Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution. "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution or a contract to the detriment of the borrower, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the borrower of the benefits of free and open competition.

CMC will be applicable during the period of the warranty period of 5 years for the solar components and 1 year for the rest of the materials. The bidder must enter into a Comprehensive maintenance contract for the specified period at the time of execution of the order. Offer without such CMC shall not be considered (sample format of CMC enclosed at Annexure). The scope of CMC must cover supply of all spare parts, services and performance reports during the contract in force. Order shall be placed on bidders who agree to offer such CMC. The CMC charges quoted by the bidder must be realistic in view of actual rendering of after sale services. The payment of annual maintenance charges under the Comprehensive Maintenance Contract shall be made on submission periodic maintenance reports duly certified by the concerned authorized officials of the Project Implementing Agency and countersigned by the authorized officer of OREDA. Upon receipt of such certificates CMC amount as applicable shall be paid at the end of 1st, 2nd, 3rd, 4th and 5th years.

5.15 Limitation of Liability:

OREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of supply / installation. All safety measures as per prevailing norms should be adopted. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations. The executants shall take all steps towards the security compliances.

5.16 Force Majeure:

In no event shall either Party have any liability for failure to comply with this Agreement, if such failure results directly from the occurrence of any contingency beyond the reasonable control of the Party, including, without limitation, strike or other labor disturbance, riot, major power failure, war, natural calamities including but not limited to floods, earthquakes, fire, volcanic eruptions, epidemics, National Emergency, interference by any government or governmental agency, embargo, seizure, or enactment or abolition of any law, statute, ordinance, rule, or regulation (each a " Force Majeure Event"). In the event that either Party is unable to perform any of its obligations under this Agreement because of a Force Majeure Event, the Party who has been so affected shall as soon as may be, after coming to know of the Force Majeure Event, inform the other Party and shall take

6. TECHNICAL SPECIFICATIONS OF SPV ENERGIZED WATER CHILLER WITH RO PLANT SYSTEM

1.1 SYSTEM DESCRIPTION:

1.1 Solar Photovoltaic (SPV) Water Chillers system shall consist of mainly the following: -

- i) Solar Modules
- ii) Module mounting structure
- iii) Junction boxes
- iv) Power conditioning unit (PCU)
- v) Cable and other accessories
- vi) Earthing & Protection
- vii) RO WATER PURIFIER SYSTEM
- viii) Water chillers system
- ix) Water dispensation.

1.2 The PV array converts the light energy of the sun to DC power. The module mounting structure shall be used to hold the module in position. The DC power shall be converted to AC by PCU to supply AC load to the water chilling system

1.3 DC distribution board/ combiner shall be provided in between solar array and PCU. It shall have DC Disconnecter/MCCB of suitable rating for connection and disconnection of array section. Type II Surge Arrestor should be incorporated for surge protection.

1.4 AC distribution board shall be provided in between PCU and loads. Though not mandatory, firms are however encouraged to also offer the facility for recording the energy output data of each inverter
The system shall comply IEC 60364-7-712 and 62446.

2.0 GENERAL REQUIREMENTS:

2.1 Solar panels and array junction boxes shall be installed on shade free roof / in ground. Even though roof-top mounting of solar panels shall be the preferred option, if necessary, OREDA can at their option specify a ground mounted solar system for part or full system KWp capacity.

2.2 Array structure of PV yard and all electrical equipments such as PCU, inverters, etc. shall be grounded properly. Towards this end, the contractor will supply and install an adequate number and appropriate size of IS:3043 - 1987 compliant earthing kits for AC circuit, DC circuit and lighting protection system.

2.3 Suitable marking shall be provided on the bus for easy identification.

The system should offer RS232/RS485 port and LAN/ WAN interface to facilitate remote monitoring of the system.

3.8 Module Mounting Structure

3.8.1 The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels.

3.8.2 The structure shall be designed to allow easy replacement of any *module by authorized personnel and shall be in line with the site requirements.* Bird spike shall be provided so as to avoid bird sitting on the solar modules at the highest point of the array/module structure.

3.8.3 The array structure shall be made of hot dipped galvanized MS angles (or alternate MS sections) of suitable size. Galvanization thickness shall be of min. 85µm. If the systems are installed in coastal/ corrosive areas, the *minimum* galvanization thickness of array structure shall be 120µm. Unless the purchaser has specifically asked for 120 µm thickness, normally 85 µm will be supplied.

3.8.4 The foundation for module mounting structure shall be 1:2:4 RCC construction or any other combination based on the local site condition requirement for which design details shall be submitted.

3.8.5 The support structure, design and foundation shall normally be *designed to withstand wind speed upto 180 kmph.*

3.8.6 The clearance between lowest part of the module structure and the developed ground level shall normally not be less than 500mm. However, in exceptional cases, lower clearances may be allowed on case to case basis.

3.8.7 The module alignment and tilt angle shall be calculated to provide the *maximum annual energy output. This shall be decided based on the location* of array installation. The SPV panel shall have a provision for angular adjustment of the mounting structure to get maximum utilization of incident sunlight. It shall be mounted facing south and tilted to an angle equal to the latitude (where being used), for optimum performance.

3.8.8 Fasteners shall be of stainless steel SS304. To prevent pilferage, anti-theft fasteners shall be provided at appropriate locations.

3.9 Junction Boxes

Array sub-main and main junction boxes, shall have the following properties:

iii) The junction boxes shall have suitable cable entry points with cable glands of appropriate sizes for both incoming and outgoing cables. Though not mandatory, manufacturers are encouraged to provide suitable cable entry points fitted with MC-4 Connectors.

iv) Suitable markings should be provided on the bus bar for easy identification, and cable ferrules shall be fitted at the cable termination points for identification.

v) The Array Junction Box should preferably have maximum 08 input with SPD and Terminal block.

3.10 Earthing for PV array, Balance of System (BOS), lightning protection and other components.

i. The photovoltaic modules, Balance of system (BOS) and other components of power plant require proper grounding for protection against any serious faults as guided by IEC 60364.

ii. The earthing resistance must not exceed the limits generally in practice for such applications.

iii. The Bidder shall submit the detailed scheme of earthing and grounding.

iv. The contractor will supply and install an adequate number and appropriate size of IS:3043 – 1987 compliant earthing kits for AC circuit, DC circuit and lighting protection system.

v. The source of over voltage can be lightning or other atmospheric disturbance. Main aim of over voltage protection is to reduce the overvoltage to a tolerable level before it reaches the PV or other sub-system components. Lightning protection should be provided as per IEC 62305.

vi. Necessary concrete foundation or any other arrangement for holding the lightning conductor in position is to be made after giving due consideration to shadow on PV array, maximum wind speed and maintenance requirement at site in future.

vii. The lightning conductor and structures shall be earthed through flats as per applicable Indian Standards with earth pits. Each lightning conductor shall be fitted with individual earth pit as per required Standards including accessories, and providing masonry enclosure. Else, a matrix of lightning conductors is to be created which will be required to be connected to an earth.

viii. If necessary, more numbers of lightning conductors may be provided.

ix. The Bidder shall submit the drawings and detailed specifications of the PV array lightning protection equipment.

3.11 Power Conditioning Unit (PCU)

PCU shall supply the DC energy produced by array to DC bus for inverting to AC voltage using its MPPT (Maximum Power Point Tracking) control to

3.9.11 Built-in data logging to monitor plant performance through external PC shall be provided.

3.9.12 Inverter shall be tested for islanding protection performance.

3.9.13 Only isolated inverters shall be grounded on DC side.

3.12 Indications (through LEDs/ LCD display)

Following is an indicative list of indications:

- i) Inverter ON
- ii) Grid ON
- iii) Inverter under voltage/over voltage
- iv) Inverter over-load
- v) Inverter over-temperature
- vi) Earth Fault
- vii) Chilling temperature

3.13 Protections

Following is an indicative list of protections:

- i) Over-voltage both at input and output
- ii) Over-current both at input and output
- iii) Over/under grid frequency
- iv) Over temperature
- v) Short circuit on AC side
- vi) Reverse polarity protection
- vii) Array ground fault protection
- viii) Protection against lightning induced surges Class II, 10 kA as per IEC 61643-1
- ix) Protection against surge voltage induced at output due to external source

3.14 Cables and Hardwares

The cables used in module/array wiring shall be TUV 2Pfg 1169/08.2007 or VDE EPV 01:2008-02 or UL4703 certified.

Cables of appropriate size to be used in the rest of the system shall have the following characteristics:

- i) Temp. Range -10 C to +120 C.
- ii) Voltage rating 600/1000V
- iii) Excellent resistance to heat, cold, water, oil, abrasion, UV radiation, ozone and weathering
- iv) Halogen-free, low smoke, low toxicity.
- v) Flame retardant
- vi) Flexible

Client Scope: Power supply, Water supply, Raw Water Tank & Treated Water Tank Customer Scope.

RAW WATER PUMP

Purpose: To feed the Dual Media Filter at pressure more than 2.0 bar, which is min. operating pressure for filter.

Capacity: 1 HP/2900rpm

Make: CRI/Krilsoker/ANY OTHER EQUIVALEMNT FOR ABOVE CAPACITY

Quantity : 01no.

MICRON FILTER

Purpose: To remove the find particles up to 05 microns and reduce silt density index levels to acceptable level. Cartridge Filter & Housing

Specifications Cartridge Filter & Housing

Big Blue Housing:

a) MOC of Housing : PP

b) Length : 20"

c) Diameter : 5.5"

d) Quantity :1 no.

Cartridge:

f) Make: Reputed

g) Cartridge MOC : Polypropylene

h) Length : 20"

i) Diameter :4"

j) Quantity :2 no.

k) Micron rating : 5micron

Technical Data (RO Plant)

HIGH PRESSURE PUMP: 01 no.

Purpose : To feed the Reverse Osmosis Membranes at pressure more than the osmotic pressure taking into consideration flux rate, flow and recovery.

Specifications a) MOC :CI

b) Type :H

c) Flow Rate :11 00 litres per hour

e) Power Required : 1.5hp

f) Electrical : 220 V, 1 phase,

g) Cycle : 2900 rpm

Make CRI Pumps/Sumo Pump/ ANY OTHER EQUIVALEMNT FOR ABOVE CAPACITY

Reverse Osmosis Unit:

Purpose : To remove the major part of TDS upto 98% by Reverse Osmosis Membranes arranged and designed to give adequate flow and

The details of service centers in India shall be provided along with the offer. All essential materials and manpower shall be placed at the service centers to ensure quick and efficient after sales service.

7.0 LOG BOOKS:

OREDA shall maintain a logbook detailing inspection and operating activities. This logbook must be kept in a secure place and shall be made available, whenever required for inspection. Testing of all protection devices shall be carried out at regular intervals (*no longer than six months*) by the customer.

8.0 WATER CHILLER:

IN-SITU PUF insulation A unique In-situ PUF insulation ensures that water remains cool for a longer period in case of power failure and hence saves power.

- *ECO friendly refrigerant: CFC-Free refrigerant ensures that there's no damage to the environment.*
- *High efficiency heat transformer coil: High quality copper tubes with Rippled Aluminium Fins for its air-cooled condenser ensures highest heat transfer efficiency.*
- *Speedy drainage: The extra large stainless steel water tray prevents splashing acid ensures faster drainage of water.*
- *Adjustable parts for easy levelling: So that they stand steady on uneven surfaces.*
- *Faster cooling; High Energy Efficient Compressor speeds up the cooling process so that you get cold water faster it also ensures less power consumption.*
- *Partial Stainless Steel (PSS):Pre-coated outer body for better corrosion resistance.*
- *Compact space saving design: This allows them to fit even in cramped spaces.*
- *Food grade plastic parts: Plastic parts that come in contact with water are of food grade quality ensuring hygiene.*

SAMPLE FORMAT FOR C.M.C

Subject to modification as per suitability of system and project requirement) Comprehensive Maintenance Contract (CMC) for maintenance of SPV Energised Water Chilling Plant with RO supplied and install by M/S

.....

This Comprehensive Maintenance Contract (CMC) is executed between the Orissa Renewable Energy Development Agency (OREDA) , S-3-59, Mancheswar Industrial Estate, Bhubaneswar-10, represented by its Deputy Director (Tech), Project Division herein after called as 1st. party and M/S

.....

..... herein after called as 2nd party, for maintenance of sets offor a period of five years with effect from AD, supplied, installed and commissioned vide purchase order No Dated in village blocks of Districts.

The 2nd party will maintain these Systems as per the terms and conditions mentioned here under.

1.It has been envisaged in the purchase order No/ OREDA dated under clause No that these No/sets of shall be warranted against any manufacturing defect and bad workmanship at least for a period of 1year for the system and 10 years for the PV modules from the date of commissioning . As these systems have been commissioned and handed over to the 1st party through its Assistant Director (Tech) / authorized OREDA official at DRDA During all these systems , as such are covered under warranty period up to and respectively.

Hence, the 2nd party is fully responsible for their trouble free maintenance and the 2nd party is liable to rectify / remove any defect noticed within the aforesaid period free of cost.

2.The 2nd party will impart training to two nos. of youth from each completed village to be able to provide first aid repair service for the SPV Energised Water Chilling Plant with RO installed in the ____

14. The 2nd party may continue to maintain the gadgets after expiry of the maintenance period of 10 years provided the beneficiaries/1st party desires

16. For adjudication of any dispute between the two parties arising on execution of this CMC , the matter shall first be brought to the notice of Chief Executive, OREDA.

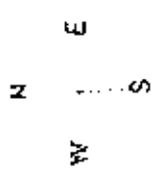
17. In case, there will be no amicable settlement of the issues, the matter can be referred to the court of law having jurisdiction at Bhubaneswar only. The Annual Maintenance contract is signed jointly between the two parties today i.e on dated day of 2016 and shall come into force from the date of its signature(s).

For and on behalf of Odisha Renewable Energy Development Agency,
Bhubaneswar

For and on behalf of M/S

(1st Party)

(2nd party)with Seal



50000 L.R. TANK

SOLAR PANELS
19000000500Prk. each

WATER 1 1/2"
STANDPOST

CONTROL BOX

1780

CHILLER

REC. EQUIPMENT

GRADED
PRE-INSULATED PIP

CASING

3000

PCC

1000

1576

