

**OFFICE OF THE PROJECT DIRECTOR, LADAKH RENEWABLE ENERGY
DEVELOPMENT AGENCY, LADAKH AUTONOMOUS HILL DEVELOPMENT
COUNCIL, LEH.**

**NIT NO: 2 of 2015-2016
DATED: 27-05-2015**

Sealed tender/offers duly affixed with Revenue Stamps worth Rs.5/= (Rupees Five Only) are invited by Project Director, LREDA-LAHDC, Leh on behalf of the Governor of Jammu & Kashmir for **“Supply, Installation & Commissioning of 07nos Solar Steam Cooking System at various sites in the Leh District of Jammu & Kashmir”**.

The detail tender documents containing broad specification and schedule of works can be had from the office of the Project Director, Ladakh Renewable Energy Development Agency (LREDA), Leh on payment Rs. 2000 (Rupees Two Thousands only). The tender documents can also be downloaded from <http://www.ladakherergy.org>, www.leh.nic, but payment should be made then and only then tender shall be accepted.

The tender documents duly completed in all respects addressed to the Project Director, LREDA-LAHDC, Leh should reach this office on or before 20-06-2015 upto 1.00 P.M, which shall be opened on the same day or any other day convenient to the members of the committee in presence of the tenders/their authorized representative who may like to be present at the time of opening.

The Project Director, LREDA-LAHDC, Leh reserves the right to accept or reject any tender without assigning any reason thereof.

**Sd/-
Project Director,
LREDA-LAHDC
Leh Ladakh
Dated: 27-05-2015**

NO:- LREDA/Acctts/()

Copy to the:-

1. Deputy Commissioner/Chief Executive Officer, LAHDC, Leh Ladakh.
2. Technical Director, NIC, Leh with the request to put the NIT on official website.
3. Joint Director, Information, J&K Srinagar/Jammu with the request to kindly publish the NIT in one leading National and one state English News Paper.
4. Notice Board, Project Director, LREDA-LAHDC Office, Leh.
5. _____ for information.

**Sd/-
Account Officer,
LREDA-LAHDC,
Leh-Ladakh**

**OFFICE OF THE PROJECT DIRECTOR, LADAKH RENEWABLE ENERGY
DEVELOPMENT AGENCY, LADAKH AUTONOMOUS HILL DEVELOPMENT
COUNCIL, LEH**

Website: www.leh.nic.in, ladakhenergy.org
Tel: 01982-255733 Fax: 01982-257410



LREDA

TENDER DOCUMENT: No.2/LREDA/SOLAR COOKER/2015-2016

For

**RATES FOR SUPPLY, INSTALLATION, AND COMMISSIONING OF
SOLAR STEAM COOKING SYSTEM STRICTLY AS PER THE
SPECIFICATIONS OF LREDA AND M.N.R.E**

- I. To be submitted by 1 P.M. on or before 20-06-2015 in the office of Project Director, LREDA-LAHDC, Leh-Ladakh
- II. To be opened at 3 P.M. on 20-06-2015 in the office of the Project Director, LREDA-LAHDC, Leh-Ladakh
- III. Issued to

M/s. _____

(Tenderer)

Date of Issue of Tender: _____

Money Receipt No. _____ Date _____ Amount Rs.
2000/- (Two Thousand Only)

Signature of Officer Issuing the Document.

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**OFFICE OF THE PROJECT DIRECTOR, LADAKH RENEWABLE ENERGY
DEVELOPMENT AGENCY, LADAKH AUTONOMOUS HILL DEVELOPMENT
COUNCIL, LEH LADAKH**

Website: www.leh.nic.in, www.ladakhenergy.org

Tel: 01982-255733 Fax: 01982-257410



LREDA

TENDER DOCUMENT: No. 2/LREDA/SOLAR STEAM COOKER/2015-2016

NOTICE INVITING TENDER

Office of Project Director, LREDA-LAHDC Leh Ladakh invites sealed tenders for rates the Supply, Installation & Commissioning of SOLAR STEAM COOKING SYSTEMS strictly as per the specifications of LREDA / M.N.R.E given in the tender document.

S. No	Name of the Institutions	No of system	Distance from Leh	No of Scheffler
1.	Lamdon Residential School	2Nos	0KM	4Nos
2.	Central Institute of Buddhist Studies	1Nos	3KM	4Nos
3.	Mahabodhi Residential School	1Nos	4KM	4Nos
4.	Druk Pema Karpo	1Nos	15KM	4Nos
6.	Jamyang School	1Nos	0KM	4Nos
7.	Islamiya Public School	1Nos	0Km	4Nos

Last date of submitting the sealed tender forms is **20-06-2015** till 1.00 p.m.
Opening of the tenders will be on **20-06-2015** at 3.00 p.m.

Sd/-
**Project Director,
LREDA-LAHDC,
Leh Ladakh**

Check List

To ensure that your tender submitted to LREDA is complete in all respects, please go through the following checklist & tick mark for the enclosures attached with your tender:

S. No.	Description	Attached	Not Attached
1	Earnest Money		
2	Tender Document Fee		
	The original document duly signed & sealed on each page, as a confirmation of acceptance of Terms & Conditions (T&C)		
4	A Copy of registration/CST/PAN & S.T. Clearance Certificate		
5	Details of similar work done in last three years along with copies of the orders and certificates from the customers, their address phone/fax as per the Tender Evaluation Criteria and of the tender.		
6	Details of technical staff available (Brief Biodata of key personnel be given) of the tender document		
7	Technical details and specifications highlighting salient features of the system.		
8	Declaration of the supplier about any relatives working with LREDA.		
9	Deviations, if any, from the specifications, terms & conditions etc.		
10	Whether validity of your tender is confirmed as per the document.		

UNDERTAKING OF THE TENDERER

I/We have read carefully and examined the notice inviting tender, schedule, General Rules and terms and conditions of the contract, special conditions, Schedule of Rates and other documents and Rules referred to in the tender document for the supply.

I/We hereby tender my rates for the execution of the work for LREDA as specified within the time stipulated in the schedule in accordance with all aspects with the specifications, designs, drawings and instructions with such conditions so far as applicable.

I/We agree to keep the tender open for One Year from the due date of submission thereof and not to make any modifications in its terms, conditions and rates.

A sum of Rs.2,20,000/-and Rs. 2000/- is hereby forwarded as earnest money and as document fee respectively in the form of crossed demand draft in favour of LREDA , LAHDC-Leh. If I/We, fail to commence or complete the work ordered in specified time I/We agree that the LREDA shall, without prejudice to any other right or remedy, be at liberty to forfeit the said Earnest Money absolutely. The said Earnest Money shall be retained by LREDA towards security deposit to execute all the works referred to in the tender documents upon the terms and conditions contained or referred to therein and to carry out such deviations as may be required by LREDA.

I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the work 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 prejudicial to the safety of LREDA-LAHDC, Leh.

I/We shall abide to all the laws and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments. Our state sales tax registration No. isand CST registration No.....

The PAN No. under the Income Tax Act is _____

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 LREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand. **I also agree to not to claim any amount in advance before completing the work as per terms and conditions of tender.**

Dated: Signature

Place: Name of Tenderer with seal

Witness

Signature:

Name:

Postal Address:

TENDER FORM

The undersigned hereby tender and offer (subject to the Agency's conditions of tendering) to the Ladakh Renewable Energy Development Agency (LREDA) to supply, installation, Commissioning of SOLAR STEAM COOKING SYSTEMS as per specifications of LREDA / M.N.R.E. and works which are described or referred to in the Details of Technical Particulars attached to tender document and its enclosure and in Schedules to the side. Details of Technical Particulars, copies of which are annexed here to and which under the terms there of are to be supplied, executed and done by the contractor and to perform and observe the provisions and agreements or the part of the contract contained in or reasonable to be referred from the said tender documents for the same and at the rates sets out in Schedule-I annexed hereto.

Complete Tender document is also enclosed herewith duly signed on every page by the undersigned.

Signed this..... day of 2015.

Yours faithfully,

TENDERER'S SIGNATURE

(With seal)

TENDERER'S
ADDRESS

MINIMUM CRITERION FOR BIDDING:

The bidder must have following minimum criterion for bidding:

- a. The Successful bidder must established service/spare parts centre in Leh.
- b. The bidder must be total integrated system designer and manufacturer, necessary TIN No. and PAN No. must be enclosed.
- c. Tax clearance certificate.
- d. The bidder must be from MNRE enlist of suppliers/manufacturers of solar steam cooking system.
- e. The annual turnover of the company in must be of 1million (INR) in last three financial years.

ELIGIBILITY AND QUALIFICATION CRETERIA:

The bidder shall meet the following requirements:

- a. The bidders should be a reputed designer/manufacturer of Solar steam Cooking system/Authorized dealers.
- b. The bidder must have experience of supplying, installing and commissioning of at least 3 steam solar cooking system during last three years in India and shall be given preference those companies who have successfully installed & commissioned such system in India. List & Purchase order copy & performance certificate must be enclosed.
- c. The successful bidder must established his service/spare parts centre in Leh with local entrepreneur/representative of trained person and having experienced in handling of equipment to provide necessary service after the supply at the site. Details of service centre in Leh to provide necessary service.
- d. The documentary evidence for meeting the eligibility criteria must be submitted along with offer.
- e. All the certificates/documents shall be submitted by the firm duly signed with the seal and should be duly attested from gazetted officer.
- f. All information of the tender shall be in English, information in any other language will be accompanied with its translation in English. Failure to comply with this may disqualify the tender.

INSTRUCTIONS FOR TENDERER

1. **Project Director, LREDA-LAHDC, Leh Ladakh** invites sealed offers for Supply, Installation & Commissioning of **SOLAR STEAM COOKING SYSTEMS** strictly as per the specifications of LREDA/ M.N.R.E. as presented in the tender documents.
2. Tender must reach the **Office of The Project Director, LREDA-LAHDC Leh Ladakh** by 1.00 P.M. on **20-06-2015**. Tenders received after the time and date shall not be considered. Covers should invariably be super-scribed 'Supply, Installation & Commissioning of SOLAR STEAM COOKING SYSTEMS strictly as per the specifications of LREDA / M.N.R.E. as presented in the tender documents. Earnest Money deposited Rs.2,20,000/- and tender document fees Rs. 2000/- in the form of Demand Draft drawn in favour of Project Director LREDA-LAHDC, Leh payable at Leh. The tenders will be opened at 3.00 P.M. on 20-06-2015 separately also in the same tender.
3. When tenders are delivered by special messenger, it should be deposited in the tender box kept in the office of the **Project Director, LREDA-LAHDC, Leh- Ladakh due date and time**. Nobody is authorized to receive or grant receipt for tender delivered.
4. Full descriptive particulars and complete specifications should accompany the offer. Offers should be kept open for acceptance for at least one year from the date of opening. Those who do not agree for validity of one year will do so at their own risk and no request for extension will be intimated from this office. However if due to circumstances beyond control tenderers are advised to extend the validity, they shall not be permitted to revise their rates, but can offer any rebate or concession.
5. The terms and conditions and specifications mentioned in tender specifications shall be binding on the tenderers and no condition or stipulation contrary to the conditions shall be applicable. Please note that the tenderers who do not accept terms and conditions stipulated in this tender specifications, their offers shall be liable to be out rightly rejected without assigning any reason whatsoever.
6. Each page of tender document & enclosures shall be signed by the tenderer and affix the seal. All the pages of the documents issued must be submitted along the offer.
7. **Project Director, LREDA-LAHDC, Leh** reserves the right (i) to reject any or all tenders **in part or full** or to accept any tender considered advantageous to LREDA whether it is the lowest tender or not and (ii) to split the quantities against the tender on more than one firm for the same items/ work. No reason will be assigned by **Project Director, LREDA-LAHDC, Leh** for this and will be binding on the tenderers.
8. In case of any corrections / alterations done in the tender, the tenderer should sign the same otherwise tenders may not be considered.
9. Offers through Telegraph/ Fax /Emails or open offer received will not be considered and summarily rejected.
10. All the tenderers shall essentially indicate the break-up of prices as shown in Tender form. In case any of the charges are not included in the quoted prices, the same shall be clearly shown as extra, indicating specifically the rate/scale of such charges.

11. EARNEST MONEY:

- a. Tenders other than those indicated at the clause above shall be accompanied with the earnest money **Rs.2,20,000.00(Rupees Two lakh twenty thousand only)** in the form of CDR/FDR/DD/BG pledged to the **PROJECT DIRECTOR, LREDA-LAHDC , LEH-LADAKH .**
- b. Tenders not accompanied with the required amount of earnest money will be rejected and their price bid shall not be opened.

12. FORFEITURE OF EARNEST MONEY DEPOSIT:

It should be clearly understood that in the event of tenderer failing to enter into the agreement in the prescribed format and to execute work ordered, within stipulations on the rates tendered by him, if he is so communicated within the validity period of the offer, the full amount of the earnest money will be forfeited and **Project Director, LREDA-LAHDC, Leh** decision in this respect will be final and binding on the tenderer. However the EMD shall be treated as security deposit after placement of orders.

13. PRICE:

The prices quoted should be firm and F.O.R. anywhere in Leh district including civil work, all taxes and duties, excise, custom, import duties, Sales Octroi, Entry Tax, packing, forwarding freight, insurance and any other incidental charges.

14. JURISDICTION OF THE COURT:

Any dispute arising out of the contract shall be subject to the jurisdiction of local court of Jammu & Kashmir State alone.

15. SECURITY DEPOSIT:

- a. The successful tenderer(s) shall be required to furnish security deposit equivalent to 10% of the value of the contract in the CDR/FDR/bank guarantee form nationalized/scheduled bank pledged to the **PROJECT DIRECTOR, LREDA-LAHDC, Leh** for the period of warranty i.e. 2years from the date of receipt.
- b. Security deposit shall be furnished within one month from the date of detailed purchase order. Failure to do so within the stipulated period will make the contract liable for cancellation together with forfeiture of EMD at the discretion of chairman purchase committee LAHDC, Leh. The EMD of the successful tenderer(s) equivalent to Rs.2, 20,000.00 of the contract shall be released after the 2 years of the warranty period.

16. WARRANTY:

- a. The life of Solar cooker Reflector supplied with no peeling of silver coating shall be minimum period of five years and that of frame and structure must be of fifteen years from the date of supply of the system.
- b. The warranty for the whole system must be of two years.
- c. Necessary maintenance spares for two years trouble free operation will also be supplied with the system.
- d. The supplier shall be responsible to replace free of cost (including transportation and insurance expenses) to the purchaser whole or any part of supply which under normal and proper use become dysfunctional within one month of issue of any such complaint by the purchaser.
- e. In case the supplier fails to rectify/replace the defective/damaged equipment including transit damage, shortages within one month from the date of intimation of such shortage/damage, they shall have to pay interest to **PROJECT DIRECTOR, LREDA-LAHDC, Leh-Ladakh @3% per month** on the value of such materials.

17. ANNUAL MAINTENANCE CONTRACT:

The Supplier shall be responsible for the maintenance of the systems for a period of 2 years including 2 years of warranty period from the date of commissioning of the systems. The price quoted by the supplier should include the warranty/maintenance for 2years.

Scope of annual maintenance contract:

Replacement/repairing of all defective components if any during the 2 years of maintenance /warranty period should be free of cost. Necessary spares to be maintained at Leh for smooth operation of the solar cooker.

18. DELIVERY OF SOLAR COOKING SYSTEM

- a. The bidder shall indicate the time along with the offer and shall be mutually agreed at the time of order finalization.
- b. Delivery of the equipment should commence within one month from the date of placement of order.
- c. In case of failure to deliver in full the required supplies on order, the purchaser shall have the right to make a risk purchase at the cost of supplier and/or cancel the contract and claim reasonable compensation/damages. The contract of supply shall be repudiated if the supplies are not made within the prescribed period and to the satisfaction of the purchase officers.

19. **PAYMENT SCHEDULE**

1. 25% shall be made as advanced payment to the successful, subject to the submission of a bank guarantee for an equal amount valid for a period of one year at least.
2. Another 25% shall be released on receipt of the material at the site,
3. 45% after the installation and commissioning of the system.
4. 5% will be released after two years at the end of two year of warranty period on submission of documentary evidence confirming successful O&M.

20. **MATERIAL INSPECTION**

The material inspection shall be done at the factory location before shipment of the material from factory location. The material inspection charges (boarding /lodging) for two representatives from LREDA have to be borne by the successful tenderer.

GENERAL CONDITIONS OF CONTRACT

1. DEFINITION OF TERMS:

In writing these General Conditions of Contract, the specification and bill of quantity, the following works shall have the meanings hereby indicated unless there is something in the subject matter or content inconsistent with the subject.

LREDA shall mean the Ladakh Renewable Energy Development Agency represented through the Director.

The "Engineer in charge" shall mean the Engineer or Engineers authorized by Director, for the purpose of this contract. LREDA Engineer shall mean any Engineering person or personnel authorized by LREDA to supervise the work.

"The contractor" shall mean the successful bidder awarded with the contract or their successors and permitted assigns. Contract Price shall mean the sum named in or calculated in accordance with the provisions of the contract as the contract price. General Conditions shall mean these General conditions of Contract.

"Specifications" shall mean the specifications of M.N.R.E. and annexed to these General Conditions of contract and shall include the schedules and drawings attached thereto or issued to the contractor as well as all samples and pattern, if any,

"Month" shall mean calendar month. "Writing" shall include any manuscript, typewritten; printed or other statement reproduced in any visible form whether under seal or under hand.

2. CONTRACT DOCUMENT:

The term "Contract" shall mean and include the General conditions, specifications, schedules, drawings, supply orders, issued against the contract schedule of price or their final general conditions, any special conditions applying to the particular contract specification and drawings and agreement to be entered into. Terms and conditions not herein defined shall have the same meaning as are assigned to them in the Indian contract Act

3. MANNER OF EXECUTION:

Execution of work shall be carried out in an approved manner as outlined in the technical specifications or where not outlined, in accordance with relevant Indian Standard Specifications or M.N.R.E. (where ever required), to the reasonable satisfaction of LREDA

4. **CONTRACTORS DEFAULT LIABILITY:**

LREDA may upon written notice of default to the contractor terminate the contract in circumstances detailed here under: -

- a. If in the judgment of the LREDA, the contractor fails to supply/commission the items within the time specified in the contract agreement or within the period for which extension has been granted by LREDA to the contractor.
- b. If in the judgment of LREDA, the contractor fails to comply with any of the provisions of this contract.
- c. In the event LREDA does not terminate the contract as provided in paragraph (a) the contract shall continue performance of the contract in which case he shall be liable to LREDA for penalty for delay as set out in this contract until the work is completed at the rate of 0.5% per fortnight.

5. **FORCE MAJEURE:**

The contractor shall not be liable for any penalty for delay or for failure to perform the contract for reasons of FORCE MAJEURE such as of God, acts of public enemy, acts of government, cyclone fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes provided that the contract, shall within 10 (ten) days from the beginning of such delay notice the LREDA in writing of the cause of delay. LREDA shall verify the facts and grant such extension as facts justify.

6. **REJECTION OF WORKS:**

In the event of any of the material supplied by the contractor is found defective in material or workman ship or otherwise not in conformity with the requirement of this contract specifications, LREDA shall either reject the material and/ or work or advise the contractor to rectify the same. The contractor on receipt of such notices rectify or replace the defective material and rectifies the work, free of cost. If the contractor fails to do so, LREDA may,

- a. At its option replace or rectify such defective materials and recover the extra cost so involved from the contractor plus fifteen percent penalty from the contractor and/ or terminate the contract for balance work/ supplies with enforcement of penalty as per contract.

SCOPE OF WORK

The work consists of design, manufacture, supply, installation and commissioning of a Solar Steam Generation and Cooking System (Should be designed to perform in -30 degrees Celsius temperature zone.) The integration its components should be done such that as much steam as possible be produced with Solar Steam Generations system for cooking. The manufacturer shall provide structural and design drawings with aggregate and complete details as specified during pilot sampling and inspection. The supply of cement and structural components required for the solar steam generation and cooking systems will be provided and erected by the supplier.

TECHNICAL SPECIFICATION: SOLAR STEAM COOKING SYSTEM

1. Components

The Solar Steam Cooking System will consist of the following components including their accessories as given below:-

a) **Parabolic Concentrators:**

The aperture area of parabolic concentrators will be 16sqm. The system will comprise of set of such concentrators for different capacities of people as per below.

S.No	Items	Quantity
1.	Number of Parabolic Concentrators 16sqm.	4nos.

- i) The shape and make of each concentrator will be an elliptical dish made of a number of reflecting mirrors fixed to a rigid support frame/structure to form Scheffler reflector. The concentration of each concentrator will be over 80 %.
- ii) Each parabolic concentrators of the system will have reflector frame fitted with reflectivity material, rotating support and a stand. The concentrators will be installed in such a way that solar energy will get sharply focused to front of the receivers attached to a steam header. The tracking system will be such that once initiated; it will automatically orient itself towards the sun irrespective of the time of initiation and then automatically track the reflector as per the position of the sun throughout the day. The tracking will have a feedback system to continuously sense the position of the sun to achieve the stated accuracy of tracking. The central tracking system will focus all the sunlight exactly on the receiver. Seasonal adjustment in N-S direction will also be done automatically. Each unit of concentrators connected on series will have its own central tracking arrangement the stands of the concentrator will be properly grouted. The following items will form part of the parabolic concentrator:-

b) **Reflector Frame:**

The reflector frame shall be rigid enough to avoid any deformation of the reflector dish during manual handling /tracking, wind pressure (shall be designed to withstand wind velocity of 200 km/h). The reflector frame should be made of anodized aluminium /mild steel with epoxy anti-rust coating. It will have:

- a. Rotating support as per design
- b. upper and lower stand as required

c) **Reflectors mirrors:**

- i) Materials: Reflectors shall be made of solar grade mirror/glass of minimum thickness 3mm with protective layers of coating on back surface and sides to

minimize the weathering effect Special protection to be made for Leh Ladakh region.

- ii) Reflectivity: 90% minimum with a maximum degradation of 10% with no peeling of silver coatings in 5years.
- iii) Mirror fixing: Glass holding has to be in specially designed mirror holding aluminium channel section which secures glass positively in the slot to cover the edges of the mirror along the frame of dish by sticking good quality adhesives. Due protection of mirrors coatings will be taken while fixing the mirrors. Tying of wire with mirror is not acceptable. Special protection to be made for high windy area of Leh Ladakh region.

d) Central Tracking System (CTS):

The Central Tracking System (CTS) for each unit of concentrators will comprises of DC drive motor, gear box, guide wire rope, counter weights to balance and drive the tracking etc. The arrangement will be such that once adjusted with the help of drive motor with respect to the sun in the E-W direction it will automatically focus all the sunlight exactly on the receivers connected to the header. Seasonal adjustment in N-S direction may done manually. The Central Tracking System (CST) will have tracking accuracy of +/- 0.5 degree and will be of standard make with required protection from rains, dust, outside windy & extreme cold conditions.

The following items will form part of the CTS.

- i. Reduction gear box.
- ii. Solar PV panel (37Watt.)
- iii. Battery (12v, 14Ah)
- iv. Electronic Controller
- v. Electronic timer and relay.
- vi. DC drive motor (12V, 2.5Amp)
- vii. Wire rope(GL /SS) diameter (minimum: 10mm)
- viii. Wheels on brackets on stand to guide wire rope.
- ix. Counter weights to balance and derive the tracking.

e) Steam Header System:

Each steam header assembly connected to a group of concentrators shall consist of a receivers (circular in shape) consisting of pressure reducing station, steam and feed water pipelines and necessary valves. The design of the receivers may be such that they work on the thermo siphon principle and the water stored in the header is slowly converted into steam when the system is put in action. The pressure reducing station shall also be so designed so that it reduces the pressure of steam generated in the header from 10 kg/sq cm to 1-2 kg /sq cm to ensure safety of the user while using the steam. The system pipelines, receivers and steam headers shall be insulated with high density Rockwool insulation covered by aluminium cladding 24swg (0.6mm) so as to reduce heat losses. The system shall be hydro-tested for any leaks before insulating its various components. Feed water tank of suitable capacity, instrumentation such as pressure gauges and

water level & temperature indicator, safety valves, steam separators etc. shall be installed with the systems. Heat receivers & steam headers with test certificates for satisfactory testing at 20 kg /sq cm shall be provided. The header material shall be of IBR grade MS pipe, suitably insulated to limit heat losses to a maximum of 10%. The steam distribution piping will be stainless steel of IBR grade.

- Size of drum: 400NB Dia ×2.5mlength
- Header pipes IBR Grade
- Receivers
- Pressure pipe line, feed water lines and valves

f) Steam Pipe Line & Feed Water Pipe Line:

- Riser and Down Comer -15 NB x SCH 40 ,SA 106 GrB - IBR grade
- Steam application piping- 20 NB x SCH 40 ,SA 106 GrB - IBR grade

The entire steam pipe line, receivers and hot water pipe line system will be insulated with high density Rockwool insulation to prevent dissipation of heat so that maximum steam with latent heat energy reaches to cooking vessels. There should be proper water drainage system along with valves/ unions to be provided in all pipe lines so that freezing can be avoided.

After the trail runs, the pipe line receiver etc. would be insulated to reduce radiations losses to ensure that maximum Steam reaches the kitchen.

It will consist of the following components with insulation (120kg/m³ Rockwool with aluminium cladding of 24SWG) provided as per below.

- Steam pipe line: 5inch thick
- Feed water pipe line: 4inch thick
- Raw Water pipe line: 4inch thick
- Hot Water Pipe line: 4inch thick

g) Steam Cooking Vessels:

04 x 150 Litre Steam Cooking Vessels shall be installed with connected accessories and stands grouted to the ground. Steam coming from the steam generator lining shall be connected to the various vessels with proper cover. All the civil work for placement of cooking vessels shall be done by tenderer.

The following shall be the specifications of the cooking vessels:

<u>RICE COOKER</u> of 150 litres capacity fabricated out of 16 swg 304 qualities with lid of 18 swg Stainless steel sheet, 35x35x5mm angular stand Duly coated with silver oxide. The vessel shall have drain Valve and facility.
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<u>DAL / SAMBHER</u> vessel of 150 litres Pressure cooker capacity fabricated exactly under the specification as mentioned above.
--

<u>MULTIPURPOSE COOKER</u> of 150 litres capacity with detachable Milk

boiler of 150 litres capacity both out of 16 swg 304 Quality Steel exactly under the specification as mentioned above.

VEGETABLE COOKING Vessel of 150 litres capacity fabricated exactly under same specification as mentioned above.

SS Steam pipeline with all fittings & MS Angular stand will be provided for vessels.

h) Feed Water tank with 150 mm Rock wool Insulation:

- a. Thickness-- 5mm Bottom, 3 mm wall, 2mm top
- b. Diameter-- 900 mm
- c. Capacity-- 550 ltrs

i) Motors:

- a) 1- Phase Motor (0.5HP)
- b) 3-Phase Motor (0.5 HP)

j) Softener :

Dia	Height	Resin Qty	No of hrs of service cycle	Renegration Qty and Level	Max. & Min pressure (Kg/cm ²)	Material Of Construction
210mm	1128mm	67ltr	24	6Kg and 160	3.5	MS

k) Instrumentation & Controls

Solar steam cooking system complete with all instrumentation such as pressure gauge, temperature indicators, fluid level indicators, safety valves, water meter etc will be provided by the supplier.

2. Other Requirements

The entire structure will be strong enough to withstand wind speed of 200 km per hour without any damage. All parts components will be of weather resistant (Should be designed to perform in – 30 Deg C Temperature, design /Specification to withstand nature weathering outdoors under local climatic conditions for a minimum period of 15 years (except for reflecting mirrors which may require replacement every 5 years)

3. Spares:

Following spares should be providing with system for each site.

- 1. 25% spare mirrors of one scheffler dish.
- 2. Bonding material required for 25 % spare mirrors.
- 3. Complete Central tracking system with spare connecting rod: 1 set
- 4. Steam valves: 3nos.
- 5. Heavy Water valves: 3 nos.

6. Piston pump: 01 set
7. Water level Cock valve with glass tube set: 01 no.
8. Insulation Pads: 3 cu metres
9. Main Steam Release valve: 01 no.

4. Installation and Commissioning

The entire system shall be supplied on turnkey basis inclusive of the civil work shall be done under the supervision of Engineer-in-charge. The system will be hydro tested to confirm the output and integration of systems before work is completed.

The system should perform in extreme conditions (Below -30 Deg C Temperatures)

5. Training & Handing Over of System to User

7 days training must be provided to the user personnel to understand the operation and maintenance of the Solar Steam cooking Systems. Proper manual and logbook shall be provided with the system so that the proper documentation can be maintained.

The system will be properly installed at the site and commissioned by supplier. Necessary training will be imparted to the user regarding operation.

6. Warranty

The supplier will give two year warranty for the complete system wherein free services for any repair/ replacement of parts shall be provided.

BILL OF MATERIALS FOR STEAM SYSTEM

S.No	Element/Parameter	Quantity	UOM
1.	Reflectors Sheet(solar grade mirrors)	1	Set
2.	Reflector frame: i. Rotating Support ii. Upper and Lower Stand	1	Set
3.	Central Tracking System (CTS); i. Winch ii. Solar PV panel iii. Battery iv. Electronic Controller. v. Electronic timer and really. vi. DC drive motor vii. Wire rope of appropriate dia (GL/SS). viii. Wheels on brackets on stand to guide wire rope. ix. Counter weights to balance and derive the tracking.	1	Set
4.	Steam Header System; i. Steam Drum ii. Header pipes IBR Grade. iii. Receiver. iv. Pressure reducing station. v. Steam pipe line, feed water lines and valves.	1	Set
5.	Piping & Tank Insulation (High Density Rockwool Insulation) Suitable for -30°celsius: Cold Water pipe: 4inch thick Hot Water pipe line:4inch thick Feed water Tank :4inch thick Steam pipe line : 5 inch thick	As per the requirement	
6.	Aluminium cladding(24SWG) for insulation	As per the dimensions of piping & tank	
7.	Steam pipe line(Branch) & Feed water pipe line: i. Steam pipe line. ii. Feed water pipe line. iii. Raw water pipe line.	1	Nos
8.	Steam Cooking Utensils.	4 nos	150 litre
9.	Instrumentation : i. Pressure Gauge. ii. Water level and Temperature indicator. iii. Safety Valves. iv. Steam separator.	As per requirement	

10.	Spares	As per Technical Specification s	
11.	Misc. Items (nuts, bolts, wiring, etc.)	1	Set.
12.	Assembly Manual	1	No
13.	1. Single Phase Motor 1Nos 2. 3-Phase Motor 1Nos	As Per Specification	
14.	Cold Water Tank of 550Ltr	As per specification	
15.	Softener plant with accessories	As per specification	

NOTE:

1. Electrical cables and earthing material supply and cable lying at site for all panels, control and power instruments is to be supplied by the bidders as per the requirement at site.
2. During fabrication and civil construction, electrical supply, water supply & necessary shaded storage for mirrors and electrical components shall be provided by end user.
3. As per Indian Boiler regulation Act registration of solar steam generation systems to be done with “inspector of factories & boilers”, Kashmir Province, Srinagar J&K.

PART II: FINANCIAL BID

ANNEXURE –I: COST BREAKUP OF SOLAR STEAM COOKING SYSTEM

S.No	Element/Parameter	Qty	Cost
1.	Reflectors Sheet(solar grade mirrors)	1Set	
2.	Reflector frame: iii. Rotating Support iv. Upper and Lower Stand	1Set	
3.	Central Tracking System (CTS); x. Winch xi. Solar PV panel xii. Battery xiii. Electronic Controller. xiv. Electronic timer and really. xv. DC drive motor xvi. Wire rope of appropriate dia (GL/SS). xvii. Wheels on brackets on stand to guide wire rope. xviii. Counter weights to balance and derive the tracking.	1Set	
4.	Steam Header System; i. Steam Drum ii. Header pipes IBR Grade. iii. Receiver. iv. Pressure reducing station. v. Steam pipe line, feed water lines and valves.	1Set	
5.	Piping & Tank Insulation (High Density Rockwool Insulation) Suitable for -30°celsius: Cold Water pipe: 4inch thick Hot Water pipe line:4inch thick Feed water Tank :4inch thick Steam pipe line : 5 inch thick	As per the requirement	
6.	Aluminium cladding for insulation	As per the dimensions of piping & tank	
7.	Steam pipe line(Branch) & Feed water pipe line: iv. Steam pipe line. v. Feed water pipe line. vi. Raw water pipe line.	1Nos	
8.	Steam Cooking Utensils.	4 nos of	

		150ltr	
9.	Instrumentation : v. Pressure Gauge. vi. Water level and Temperature indicator. vii. Safety Valves. viii. Steam separator.	As per requirement	
10.	Spares	As per Technical Specifications	
11.	Misc. Items (nuts, bolts, wiring, etc.)	1Set	
12.	Assembly Manual	1No	
13.	1. Single Phase Motor 1Nos 2. 3-Phase Motor 1Nos	1Set	
14.	Cold Water Tank of 550Ltr	1Nos	
15.	Softener plant with accessories	1Nos	

ANNEXURE :- II

**PRICEBID FORMAT FOR INSTALLATION OF 4NOS SCHEFFLER DISHES
AT 7NOS SITES**

S.No	Item	Unit Rate (Rs.INR)
1.	Supply of Solar Steam Cooker with 4nos Concentrators of 16sqm each.	
2.	Installation & commissioning of Solar Steam Cooker.	
TOTAL PRICE (1+2)		

NOTE: This rates are inclusive of all Taxes, Duties, VAT, Packing, Forwarding, Freight, Insurance, Loading, Unloading, Warrantee, civil work, forwarding steam distribution piping up to kitchen, supply installation and commissioning charges and the civil work including foundation to the satisfaction of LREDA for proper installation of dishes, ladder, tracking mechanism, steam distribution pipes and vessels etc.

Name of the Authorized Signatory :

Signature of the Authorized:

Signatory Seal of the Company: