



## NSIC-Technical Services Centre-Rajkot

Tender No. **NTSC/RAJ/SWP/ 2020-21/01**

### **NOTICE INVITING TENDER**

On behalf of the Office of General Manager, NSIC Technical Services Centre-Rajkot invites sealed **TENDER** from reputed company/agency/Institute/Laboratory/Firm for **Supply, Installation, Testing & Commissioning Of Solar Water pump testing facility as per technical specifications mentioned in the Tender document.**

Tender document may be downloaded from the website of NSIC i.e. [www.nsic.co.in](http://www.nsic.co.in) or [www.eprocure.gov.in](http://www.eprocure.gov.in) and the last date of receipt of Bids will be Sept 18<sup>th</sup>, 2020 15:00Hrs

## NSIC-Technical Services Centre-Rajkot The National Small Industries Corporation Ltd.

(An Government of India Enterprise)  
80- Feet Road, Aji Industrial Area, Bhavnagar Road  
Rajkot-360003, Gujarat (India)

The National Small Industries Corporation Ltd. (NSIC), Rajkot invites sealed tender in Single stage, two envelope method (Technical & Commercial Bid in two separate sealed envelopes) from reputed company/ agency/ Institute/ Laboratory/ Firm **for Supply, Installation, Testing & Commissioning of Solar Water pump testing facility as per technical specification mentioned in the Tender document.**

Notice Inviting Bid (NIT) No.	NTSC/RAJ/SWP/2020-21/01
Scope of Work	<b>Supply, Installation, Testing &amp; Commissioning of Solar Water pump testing facility as per technical specifications Mentioned in the Tender document</b> at NSIC Technical Services Centre, Rajkot.
Supply, Installation and Commissioning	As per Technical specification – <b>Annexure 1</b>
Submitting of Tenders	<p>Sealed tenders are to be submitted in single stage, two envelope method i.e.</p> <p><b><u>Envelope-I</u> containing Technical Bid along with Tender Fee, EMD and technical submissions, and <u>Envelope-II</u> containing financial Bid only in a separate sealed envelope, Super scribed as Financial Bid.</b> Both the technical and Financial envelopes should be kept in a large sized, sealed envelope super-scribed “<b>Supply, Installation &amp; Commissioning of Solar Water pump testing facility at NTSC-Rajkot.</b>” and addressed to:</p> <p>General Manager, NSIC Technical Services Centre -Rajkot 80- Feet Road, Aji Industrial Area, Bhavnagar Road Rajkot – 360003, Gujarat, India. Tel: +91 281- 2387397-398/2387613.</p> <p>In case the tenders are submitted by Hand, the same may be dropped in Tender Box kept at Admin. Building of NTSC-Rajkot Campus.</p>
Bid Validity	Bids shall be valid for at least <b>120 days</b> from the date of technical Bid Opening.

Earnest Money Deposit	<p>EMD of Rs. 1, 47,000/- (Rupees One Lakhs forty Seven Only) shall be submitted in the form of D.D. in favour of “<b>NSIC Ltd</b>” payable at <b>Rajkot</b> and to be placed in the Technical Bid envelope while submitting the tender.</p> <p>The other option is to pay Rs. 1,47,000/- by RTGS/NEFT to the bank of purchaser as per Annexure -4</p> <p>The exemption for the payment of EMD as well as tender fee will be applicable to the Udyog Aadhaar/NSIC/ District Industry Centre registered units for the goods for which said tender is floated.</p>
Cost of Tender Documents	<p>The tender document can be collected from the office of the General Manager, NSIC-Technical Services Centre, Aji Industrial Area, Rajkot in between the period from 28<sup>h</sup> Aug 2020 to 18<sup>th</sup> Sept 2020 (except Saturday &amp; Sunday) between 10:30 hours to 15:00 hours against payment of Rs. 1000/- + 5%GST= Rs.1050/- (Rupees One thousand fifty only) (Non- refundable) by way of demand draft, in favour of “<b>NSIC Ltd.</b> ” payable at <b>Rajkot</b>. Alternatively tender form can be downloaded from our website <a href="http://www.nsic.co.in">www.nsic.co.in</a> or <a href="http://www.eprocure.gov.in">www.eprocure.gov.in</a> from 28<sup>h</sup> Aug 2020 to 18<sup>th</sup> Sept 2020. In case the tender is downloaded for submission of offer, the tender fee of Rs. 1050/- in form of demand draft in favour of “NSIC Ltd” payable at Rajkot shall be enclosed with Technical Bid of the tender while submitting the tender.</p>
Client list	<p>The Bidders are requested to provide a minimum of 2 (two) previous customers’ details to whom similar equipment has been Satisfactorily supplied worldwide. The satisfactory report should be From recent purchase client submitted along with the Bid.</p>
Performance Security	<p>i. Performance Security should be for an amount of 10% (Ten per cent) of the value of the contract.</p> <p>ii. Performance Security may be furnished in the form of an Account payee Demand Draft, Bankers Cheque from a Commercial bank,</p>
Work Completion Time	<p>Supply, installation, testing and commissioning of all Tender Equipment &amp; Instruments should be completed within four months (04 months) from the issue date of Purchase Order</p>
Last date for submission of Bids	<p>Sept 18<sup>th</sup> , 2020 15:00 Hrs (Note : In case this date is declared as holiday by NTSC-Rajkot or Govt. of India in future, then next working day shall be the last date for submission of Bids or Technical Bid opening)</p>
Date of opening of Technical Bids	<p>Sept 18<sup>th</sup> , 2020 16:00 Hrs</p>
Opening of Price Bids	<p>The time &amp; date for opening of price Bids will be intimated to the Technically qualified Bidders separately.</p>
Address for Communication and clarification	<p>General Manager, NSIC Technical Services Centre -Rajkot 80- Feet Road, Aji Industrial Area, Bhavnagar Road, Rajkot – 360003, Gujarat, India.</p> <p>Email – <a href="mailto:ntscraj@nsic.co.in">ntscraj@nsic.co.in</a> Tel: +91 281- 2387397-398/2387613.</p>

## 1) INSTRUCTIONS TO BIDDERS

### 1. Eligibility of Bidders

- (i) The Bidder should be reputed in field of Supply, Installation testing and commissioning of Solar Water pump testing facility. The proof of turnover and list of clients will be submitted with the technical Bids (at least minimum two clients **during last three years**). The test setup supplied should be in successful operation for at least one year as on the date of Bid Opening.
- (ii) Details of Service Center's located in Gujarat or adjoining areas and information on Service support facilities should be provided for the warranty period (In the Service Support Form).
- (iii) The Bidder shall be equipped and be able to carry out the Supplier's maintenance, repairs and Spare parts, stock requirement as prescribed by the conditions of the contract.
- (iv) The adequate and specialized expertise should be available or will be made available, following the execution of the contract in the Purchaser's city, to ensure that the support services are responsive and adequate.
- (v) The Bidder shall have total responsibility for the smooth and trouble- free operation of the equipment and its maintenance during the **warranty period of three years** and shall provide all necessary services for additional three years period after end of warranty period, if so required.
- (vi) Bidders who don't meet the criteria specified or make false representation in the forms, statements and attachments submitted in proof of the qualification requirements or have a record of poor performance, or have not properly completed earlier contract, or have caused inordinate delays in completion, or financial failure, etc. shall be subject to disqualification.
- (vii) After expiry of the warranty period of three years, an extended warranty of 3 years period shall be quoted separately.
- (viii) **EVALUATION CRITERIA:** Work shall be awarded to the lowest Bidder, subject to the work experience and fulfillment of other terms & conditions
- (ix) Bidder must have GST & PAN/TAN registration number and shall submit a self-attested copy along with the Technical Bid.
- (x) In case of partnership firm, Bidder shall submit a copy of partnership deed and in case of limited company, Bidder shall submit a copy of Article of Association along with Technical Bid.
- (xi) Bidder shall submit power of attorney in favour of the person who has signed the tender documents. In case of a company, the authority to sign the tender is to be given under Board Resolution and to be included in Technical Bid.

**Note:** Submission of Bid merely does not suffice for deeming the Order; all the Bidders will undergo a strict scrutiny process to evaluate the Bids received by the committee.

## 2) Technical Specifications

Please refer Annexure – 1 for Technical Specifications for Supply, Installation, Testing & Commissioning of Solar Water Pump Testing Facility as per technical specifications & NABL calibration certificate for instruments (as indicated).

### GENERAL CONDITIONS OF CONTRACT

1. **Codes & Standards:** **The sensors and its components** shall comply with the latest edition of the applicable standards.
2. **Inspections and Tests:** All routine tests & acceptance tests as per relevant standards and specification shall be carried out by the vendor at the premises of the MANUFACTURER. Charges for all these tests for all the equipment & components shall be deemed to be included with the offer price. All applicable Drawings and manufacture datasheet shall be furnished to the NSIC and charges shall be deemed to be included with the offer price. In case of failure of any equipment or component after installation and commissioning at site, though being inspected by NSIC shall still be replaced by the Bidder without any additional charge. The first charge of lubricants and consumables shall be in scope of the Bidder and charges shall be deemed to be included in the offer price.
3. **Commissioning Check Tests/ Performance and Guarantee Test:** In addition to the checks and test recommended by the manufacturer, the contractor shall supervise the acceptance tests to be carried out on each set.
4. **Certificate:** The vendor shall furnish, at its own cost, test certificate for the various material and equipment as called for. Such certificate shall be from the manufactures for the particular equipment & instrument and shall be duly authenticated by respective consultants. **NABL certificate shall be provided by the vendor.**
5. **Packing, Forwarding & Freight Insurance:** The manufacturer shall be responsible for packing, forwarding and freight Insurance of Goods so as to reach upto final destination as specified. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall be taken into consideration and the remoteness of the Goods' final destination with absence of material handling facility at all points in transit is to be taken care of.
6. **Work Completion and Delivery: Supply, Installation, Testing and Commissioning of all equipment and Instruments** should be completed within **four (04) months** period from the date of placement of purchase order by NSIC Technical Services Centre-Rajkot, 80- Feet Road, Aji Industrial Area, Bhavnagar Road, Rajkot-360003.  
**Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by email & phone the full details of the shipment including contract number, lorry receipt number or railway receipt number or Air Way Bill, etc. and date, description of goods, quantity, name of the consignee, invoice, etc. The Supplier shall mail the following documents to the purchaser with copy to the insurance company:**
  - i) Copies of the Supplier invoice showing contract number, goods' description, quantity, and unit price, total amount;
  - ii) **Acknowledgment of receipt of goods from the consignee(s) by the transporters;**
  - iii) Insurance certificate, if any.
  - iv) Manufacturer's/Supplier's warranty certificate;
  - v) Inspection Certificate issued by the Competent Authority, and the Supplier's factory inspection report; and Certificate of Origin.

- vi) Two copies of the packing list identifying the contents of each package.
- vii) Calibration certificate of all measuring and testing equipment.
- viii) All drawing for the system setup shall be submitted by Bidder.

The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.

6(A) All material/equipment to be provided by successful Bidder shall be in conformity with the specifications laid down in the contract and the vendor shall, if required by the Engineer-in-charge, furnish proof to the satisfaction of Engineer-in-charge in this regard.

6(B) Safe custody of material, equipment, instruments, etc. until its commissioning shall be Bidder's responsibility.

6(C) For instruments, pipe installation any requirement of plate insert in civil construction shall be intimated and provided by successful Bidder (except for terrace roof where no inserts shall be allowed).

**7. Transit Insurance:** For delivery of goods at the purchaser's premises, the transit insurance shall be obtained by the Supplier for all material, equipment & instruments, etc.

**8. Transportation :** Where the Supplier is required under the Contract to transport the Goods to a specified place of destination including insurance, as shall be specified in the Contract, shall be arranged by the Supplier, and the related cost shall be included in the Contract Price.

**9. Warranty:** The vendors must provide onsite full comprehensive warranty for a period of 36 months (three years) post installation & commissioning. During this period they should provide all spare parts required for repair and maintenance. Along with repair maintenance service, warranty of three years against manufacturing defects shall be provided. Warranty should be provided by the vendor. The NTSC-Rajkot is not liable to pay any extra charges on any account during warranty period.

**10. Performance Guarantee:** Performance Guarantee shall be provided against warranty for a period of 38 months (36+2months extra)for 10% of contract value.

**11. Security Deposit:** Performance Security should be for an amount of 10% (Ten per cent) of the value of the contract in the form of account payee Demand Draft/ Fixed Deposit Receipt from a commercial bank/ Bank Guarantee from a Commercial Bank in an acceptable form to NTSC-Rajkot for the duration of work completion.

**12.AMC:** The vendor must have provision for prompt and high quality after-sales service after completion of the warranty period of 3years, in an AMC basis (Hardware Portion) and must quote the cost of such AMC in the main Tender after warranty period of Three (03) years.

**13. Payment:**

- a) The 70% payment of total bill will be made by the NTSC-Rajkot by crossed account payee cheque/RTGS/NEFT for which the Bidder shall send bills in duplicate (original + copy) after Supply, Installation and Commissioning of Solar Water pump testing facility as per Technical specification, giving the

reference number of the purchase order along with copies of delivery note & satisfactory report on the Installation of equipments, from NTSC-Rajkot.

- b) The 20% payment of total bill along with EMD deposit will be released to Bidder after one month from the date of completion of training to trainers at site and on submission of Indemnity Bond by the successful Bidder for rendering services during warranty period and maintenance period.
- c) The remaining 10 % payment will be retained and shall be released against submission of performance bank guarantee, issued by nationalized bank by you of equal value of 10% with the validity of three years from the date of commissioning and completion of training of trainers, whichever is earlier.

**14. Taxes and Duties:** Suppliers shall be entirely responsible for all taxes, duties, license fees, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser.

**15. Penalty Clause:** If the Supplier fails to deliver the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty (Half percent of contract price per week of delay subject to a ceiling of 5% of final contract price).

**16. Applicable Law:** The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction in Rajkot, Gujarat.

**17. FREE MAINTENANCE AND DEFECTS LIABILITY PERIOD OF THREE YEARS**

- Regular maintenance
- Emergency call back service
- Inspect, clean, where necessary - Adjustment of machinery
- Replacement of any defective parts

**18. Rejection of Tender:** Incomplete, conditional, fax, late tenders and tenders without EMD and Tender Fee will be rejected summarily. General Manager, NSIC- Technical Services Centre –Rajkot reserves the right to reject any or all the tenders at his discretion without assigning any reason thereafter.

**19.** Interested Bidders are requested to inspect the work site at the address above mentioned and get them acquainted with the nature of work and local conditions that may have a bearing on the rates.

**20. Special Provision for Micro & Small Enterprises:-**

Micro and Small Enterprises (MSEs) participating in the tender will be given benefit as per Public Procurement Policy, 2012. Further, the MSEs owned by SC/ST/Women entrepreneurs will also be given benefits as per Public Procurement Policy, 2012. The definition of MSEs owned by SC/ST/Women is as given under:

- (a) In case of proprietary MSE. Proprietor shall be SC/ST/Women
- (b) In case of partnership MSE, the SC/ST/Women partners shall be holding at least 51% shares in the unit
- (c) In case of Private Limited Companies, at least 51% share shall be held by SC/ST promoters.

Document to claim benefits shall be enclosed in Technical Bid.

## 21. Earnest Money Forfeit:

- a) If any Bidder withdraws his Bid/tender before the period of 90 days from the date opening of technical Bid or makes any modifications in the terms and the conditions of the tender which are not acceptable to the purchaser, then the purchaser shall, without prejudice to any other rights or remedy, be at liberty to forfeit the EMD.
- b) The EMD will also be forfeited in following cases:
  - i. If the successful Bidder fails to accept, the supply order issued, based on his/her offer (Bid) within the prescribed time.
  - ii. If the successful Bidder fails to supply the Computer Systems with specifications as mentioned in Annexure –A
  - iii. If the successful Bidder delays supplies/ Computer Systems/ equipment beyond a reasonable time resulting in disruption of project.
  - iv. Successful Bidder for any reason whatsoever withdraws the tender after it is accepted or become unable or fails to execute the supply orders within stipulated delivery period.
  - v. Submission of misleading/contradictory/false statement or information and fabricated/invalid documents is detected before or after the issue of order to execute the supplies.

## 22. Notification of Award:

Prior to the expiry of the period of Bid validity, the purchaser shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification letter shall specify the sum that the Purchaser will pay to the Bidder in consideration of the supply of Computer Systems with the details of selected location/ address.

## 23. Force Majeure:

In the event of any unforeseen circumstances directly interfering with the supply of Computer Systems/equipments/work/service arising during the execution of order such as war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, floods, earthquakes, explosions, epidemics, quarantine restrictions, strikes, lockouts, or acts of God, the successful Bidder shall, within 7 working days, from the commencement thereof, notify the same in writing to the Purchaser with reasonable evidence thereof. Either party shall have the option to terminate the contract on expiry of 90 days of commencement of such force majeure by giving 14 days “notice to the other party in writing. In case of such termination, no damages shall be claimed by either party against the other.

## 24. Code of Ethics:

The Purchaser as well as the Bidder shall observe the highest standard of ethics including laws against fraud and corruption in force in India namely “Prevention of Corruption Act 1988”, during the procurement or execution of such contracts. If the Bidders are found in Bid pooling, cartelization or against law on fraud and corruption then their firms may be blacklisted.



**FORMAT & REQUIREMENTS FOR SUBMITTING TECHNICAL BID**

1. **Tender Ref. No:** NTSC/RAJ/SWP/2020-21/01
2. **Name of Bidder:** .....
3. **Complete office address of Bidder:**  
.....  
.....  
.....  
**Email ID** .....
- Phone (Mob.)** .....
- Phone (LL)** .....
4. **Tender fee payment details** (*if tender document downloaded from website*)  
Details of DD/ RTGS/ NEFT by which tender fee paid.....
5. **EMD payment details** (*Not applicable if the Bidder is holding valid registration/ exemption certificate: Details of DD/RTGS/NEFT by which EMD paid*)  
.....  
.....
6. **PAN of Bidder** (self-attested copy to be enclosed) .....
7. **GSTIN registration number of Bidder** (self-attested copy to be enclosed)  
.....
8. **Documents - Details to be enclosed with the Technical Bid by Bidder are as under:**
  - a) Performance Statement Form (As per the attached Format)
  - b) Service Support details;
  - c) Manufacturer's Authorization Form
  - d) Certificate of experience of TWO similar jobs.
  - e) Turn over certificates of minimum 20 lakhs for each financial year for last 3 years.
  - f) To avail benefit of Public Procurement Policy by SC/ST Micro & Small Enterprises, the requirement of documents to substantiate their claim (As per Para 5 of this tender) shall be submitted with Technical Bid.
  - g) Undertaking as per annexure-B on official stationery.
  - h) Duly signed all pages of the tender document as a mark of acceptance.
  - i) Power of Attorney in favour of the person who signed the tender on behalf of Bidder/ Board Resolution in case of company
  - j) Self-certified copy of valid certificate for claiming EMD exemption.
  - k) Self-certified copy of valid certificate for claiming Tender Fee exemption.
  - l) Self-attested copy of valid GSTIN registration.
  - m) Self-attested copy of valid PAN.
  - n) In case EMD paid through online banking system, the details of UTR Number and date shall be submitted.
  - o) In case the tender downloaded from website, then either the Demand Draft towards cost of tender document or UTR number and date for the transfer of tender fees shall be enclosed with the technical Bid.
  - p) The Bidders shall furnish complete Technical details of Computer Systems/ equipment/ material for the Computer Systems offered to supply.

I/We as Bidder agree and certify that:

- a. The Bid submitted through this tender shall remain valid for acceptance for 120 days from the date of opening the Technical Bid of the tender.
- b. Agree to offer onsite comprehensive warranty on the equipment, instruments & complete setup supplied & installed through this tender for Three Years.
- c. Agree to provide minimum Five days adequate training to run the Solar Water pump test facility as per MNRE Guideline for handling and O&M work during and after completion of the work.

Name & Signature of the authorized Bidder with stamp

Contact details of authorized person of Bidder who have signed the tender.

Name.....

Designation.....

Phone (office).....

Phone (Mobile) .....

Email.....

#### NOTES

- a) NTSC-Rajkot, reserves the right to accept or reject any or all applications without assigning any reasons.
- b) OFFERS with INCOMPLETE INFORMATION ARE LIABLE TO BE REJECTED, which may be noted.

General Manager,  
NSIC Technical Services Centre -Rajkot  
80- Feet Road, Aji Industrial Area,  
Bhavnagar Road –Rajkot 360003

Sr. No	Technical Specification of Solar Water Pump testing facility at NTSC-Rajkot.	Remarks
1	Vender May Visit NTSC-Rajkot Solar Water Pump testing Facility before submission the Tender.	
2	Create a new 25 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m .	
3	Create a new 50 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m .	
4	Create a new 80 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m	
5	Create a new 65 mm size surface test pump setup on above Rooftop with arrangement of Flow meter, Control Valve and pressure transmitter 02 nos ( one for delivery and second for suction) to simulate the head up to 300 m.	
6	2 nos. of Solar array simulator of Capacity (1000V, 15A) , Suitable for up to 10 hp three phase, Simulation of multiple solar cell material's I-V characteristic (fill factor) Simulation of dynamic irradiation intensity and temperature level from clear day to cloud cover conditions. Shadowed I-V curve output & Dwell time 1- 15,000 s Static & dynamic MPPT efficiency test. Support up to six channel SAS control for mutli-MPPT testing . Output Current 0 to 15A , Output power 15 kW	
7	Data logging arrangement with software for all weather and power data. (Vdc, Idc, DC Power, , tilted radiation, wire to water efficiency, horizontal radiation, Instant flow with totalizer , delivery and suction pressure ,ambient temperature, module temperature). All the data should be instantaneous data must be logged with maximum 1 minute time interval	
8	Computer System.- 02 nos. Color monitor, DVD drive, UPS, printer, Registered OS, Licensed Anti-virus, Software and data logging modules, data storing in data base.  Solar pump testing software. Data logging of following parameter:- DC voltage. DC Current. Ambient Temperature. PV module temperature. Flow (lpm). Flow Totalizer (L). Delivery Pressure. Horizontal Irradiance. Login Module. Test loop selection module. Data Storage module. Wire to water efficiency. Test Report Generation module as per MNRE/IS Standard. Graph view for IV curve.	
9	All Equipment Installation with cable and laying the instruments and earthling as per standard IS-3043, lighting arrester. Pipe setup with necessary support and cable and cable tray as mentioned below : 25 mm - 1no (For submersible) 50 mm – 1no (For submersible) 80 mm – 1no (For submersible) 65 mm - 1 no (For Surface)	
10	The vendors must provide onsite full comprehensive warranty for a period of 36 months (three years) post installation. During this period they should provide all spare parts required for repair and maintenance. Along with repair maintenance service, warranty of three years against manufacturing defects shall be provided. Warranty should be provided by the vender. The NTSC-Rajkot is not liable to pay any extra charges on any account during warranty period.	

11	Certificate: All the instruments must be calibrated from NABL accredited lab. Certificate must be valid for one year. Before installation all calibration Certificate shall be provided to NTSC-Rajkot.	
12	All the equipment must have highly accuracy as below mentioned Annexures.	
13	See Annexure I(i), I(ii), I(iii), I(iv),I(v),I(vi),I(vii),I(viii),I(ix),I(x),I(xi),I(xii) and I(xiii) For Technical Specification of Solar Array Simulator, Flow meter, Pressure transmitter, Control Valve, Temperature Sensor,Pyranometer , Array structure, Data Logger, Computer system ,Panel Meter , Solar and List of Instrument .	
14	Vendor shall provide minimum Five days adequate training to run the Solar Water pump test facility as per MNRE Guideline for handling and O&M work during and after completion of the work.	
15	Outdoor Testing – Installation of array structure 4x4 mtr ,3000 Wp capacity, Suitable size of cable laying from Array mounting structure to control room's panel board . Installation and commissioning of pyranometer 2 nos. one for Horizontal irradiance and one for Tilt irradiance with Pyranometer Measurement Module 02 nos with communication interface(Including cable). Installation and commissioning of Temperature Sensor with module 2 nos.(One for PV module, one in control room)	

**Technical Specifications of Solar Array Simulator -**

Parameters	Specifications
AC Input	3 Phase 415VAC , 47 ~ 63Hz
DC Output	Open Circuit Voltage, Voc: 0 – 1000Vdc Short Circuit Current, Isc: 0 – 15 Adc OUTPUT VOLATGE MAXIMUM : 1000 V DC OUTPUT CURRENT MAXIMUM : 15A DC OUTPUT POWER MAXIMUM : 15 KW
Line Regulation	Voltage : 0.01% F.S. Current : 0.05% F.S.
Load Regulation	Voltage : 0.05% F.S. Current : 0.1% F.S.
Voltage Measurement Accuracy	0.05% + 0.05%F.S.
Current Measurement Accuracy	0.1% + 0.1%F.S.
Output Noise Ripple	Voltage Noise(P-P) : 2550 mV  Voltage Ripple(rms) : 1950 mV  Current Ripple(rms) : 270mA
OVP Adjustment Range	Range : 0 ~ 110% programmable from front panel, Accuracy : ±1% of full-scale output
Interface	USB,RS485/RS232
Operating Temperature Range	0°C ~ 40°C
Storage Temperature Range	-40°C ~ +85°C
leakage current	< 3mA
Approval	CE
Efficiency	85% typical at nominal line and max load
GUI	PV simulator should provide the GUI software with separate laptop/ desktop for programming various parameters required for simulating the required conditions of different irradiance levels, Voc, Isc etc. GUI have provision to test as per EN 50530, CGS/GF004, SANDIA
Dynamic simulation	Simulation of dynamic irradiation intensity and temperature level from clear day to cloud cover conditions
Calibration	Provide calibration certificate from any NABL accreditation laboratory.

### Technical Specifications of Pressure Transmitter

Sr. No.	Parameters	Specification
1.	Measuring Range	From 0 to 30 bar , 0 to 1 bar
2.	Local Display	Yes
3.	Range setting switches	Yes
4.	Calibration	Calibration for given range will be done on site.
5.	Engineering units	Programmable with display keys
6.	Sensor	Piezo /Capacitance
7.	% age Accuracy	0.075%
8.	Output	Two wire 4 - 20 mA, Linear
9.	Power Supply	24 V DC
10.	Load Resistance	Max. 600 $\Omega$
11.	Humidity Limits	5 - 100% RH @40°C
12.	Damping Parameter	Configurable
13.	Electrical Connections	1/2" NPT
14.	Process Connections	1/2"NPT (F)
15.	Diaphragm	Flush mount
16.	Turn down ratio	1:100
17.	Conform measurement cell	EHEDG approval
18.	Housing	Die cast Aluminum
19.	Type	Smart, Microprocessor based
20.	Calibration Certificate	<b>Provide calibration certificate from any NABL accreditation laboratory</b>

**Electromagnetic flow meter specification**

Sr. No	Parameters	Requirement
<b><u>Flow Sensor Specification</u></b>		
1.	Service	Raw Water
2.	Type	Pulse DC excitation
3.	Flow tube	SS 304
4.	Coil Housing	Sheet steel
5.	Liner	PTFE
6.	Electrodes	SS316
7.	Grounding Rings	SS316
8.	End Connection	Flanged
9.	Protection	IP 67
10.	Accuracy	±0.5 % of MV inclusive of linearity, Repeatability, pressure effects and hystersis.
<b><u>Electromagnetic Signal Converter</u></b>		
11.	Cable length	10m
12.	Mounting	Separate
13.	Microprocessor Based Accuracy :	± 0.5% of measured value
14.	Outputs	4 - 20mA, HART, RS485
15.	Max load	500 Ohms
16.	Display	Bright graphic display
17.	Parameters	Actual flow rate, totalized flow (8 digit), flow direction, flow velocity.
18.	Diagnostics	Empty pipe detection
19.	Local indication	Programmable, front fascia magnetic pin programming
20.	Power supply	85-250 VAC, 50/60 Hz
21.	Housing	Die cast Aluminum with Polyester topcoat
22.	Cable entry	1/2" NPT (F)
23.	Area classification	Non-Hazardous
24.	Protection class	IP 67
25.	Calibration Certificate	Provide calibration certificate from any NABL accreditation laboratory

**Modulating Control Valve with actuator specification -**

<b>Rated rotary angle</b>	90 ° (adjustable)
<b>Nominal pressure rating</b>	<b><u>PN16</u></b>
<b>Flow characteristic</b>	Equal percentage
<b>Rangeability</b>	<b><u>300 :1</u></b>
<b>Leakage rate</b>	≤0.01% of Kvs
End connections	BSP
Material	Cast Brass
Seat	Reinforced PTFE
Ball	Stainless Steel
Stem	Stainless Steel
<b>Working temperature</b>	-5 ... 120 °C
<b>Medium</b>	Chilled and hot water
<b>Input signal</b>	4- 20 mA / 10 to 2 V
<b>IP</b>	54
<b>Aux. Supply</b>	24Vdc
<b>Easy mounting of directly coupled with electric Actuator.</b>	



**Temperature Sensor with module**

<b>Temperature Sensor</b>	
Type	K - TYPE THERMOCOUPLE
<b><u>Measurement Module</u></b>	
Measurement accuracy	0.3%FS
Resolution	0.1°C
Range	-50to 1300°C
Power supply	100~240VAC, -15%, +10% / 50~60Hz;
Power consumption	≤5W
Operating ambient: Temperature	-10~60°C.
Humidity	≤90%RH
Communication	Modbus RTU RS485
Electromagnetic compatibility (EMC)	±4KV/5KHz according to IEC61000-4-4 (Electrical Fast Transient); 4KV according to IEC61000-4-5 (Electrical Surge).
Sampling period	8 times per second

**Pyranometer (For Horizontal) Specifications:**

Classification to ISO 9060:2018	ISO 9060 spectrally flat Class C
Sensitivity	5 to 20 $\mu\text{V}/\text{W}/\text{m}^2$
Impedance	20 to 200 $\Omega$
Expected output range (0 to 1500 $\text{W}/\text{m}^2$ )	0 to 30mV
Maximum operational irradiance	2000 $\text{W}/\text{m}^2$
Response time (63%)	< 6s
Response time (95%)	< 18s
Spectral range (20% points)	285 to 3000nm
Spectral range (50% points)	300 to 2800nm
Zero offsets (unventilated) (a) thermal radiation (at 200 $\text{W}/\text{m}^2$ ) (b) temperature change (5 K/h)	< 15 $\text{W}/\text{m}^2$ < 5 $\text{W}/\text{m}^2$
Non-stability (change/year)	< 1%
Non-linearity (100 to 1000 $\text{W}/\text{m}^2$ )	< 1.5%
Directional response (up to 80° with 1000 $\text{W}/\text{m}^2$ beam)	< 20 $\text{W}/\text{m}^2$
Spectral selectivity (350 to 1500 nm)	< 3%
Tilt response (0° to 90° at 1000 $\text{W}/\text{m}^2$ )	< 1%
Temperature response	< 5% (-10°C to +40°C)
Field of view	180°
Accuracy of bubble level	< 0.2°
Temperature sensor output Detector type	Thermopile
Operating and storage temperature range	-40°C to +80°C
Humidity range	0 to 100%
MTBF (Mean Time Between Failures)	> 10 years
Ingress Protection (IP) rating	67

**Pyranometer (For Tilt) Specifications:**

Spectral range (overall)	400 to 1100nm
Sensitivity Sensitivity (10 $\mu\text{V}/\text{W}/\text{m}^2$ version)	60 to 100 $\mu\text{V}/\text{W}/\text{m}^2$ 10 $\pm 0.5$ $\mu\text{V}/\text{W}/\text{m}^2$
Impedance Impedance (10 $\mu\text{V}/\text{W}/\text{m}^2$ version)	50 $\Omega$ < 10 $\Omega$
Expected output range (0 to 1500 $\text{W}/\text{m}^2$ ) Expected output range (10 $\mu\text{V}/\text{W}/\text{m}^2$ version)	0 to 150mV 0 to 15mV
Maximum operational irradiance	2000 $\text{W}/\text{m}^2$
Response time (95%)	< 500 ns
Non-stability (change/year)	< 2%
Non-linearity (0 to 1000 $\text{W}/\text{m}^2$ )	< 2.5%
Directional response (up to 80° with 1000 $\text{W}/\text{m}^2$ beam)	< 10 $\text{W}/\text{m}^2$
Temperature Response	- 0.15%/°C
Field of view	180°
Accuracy of bubble level	< 0.2°
Detector type	Photo-diode
Ingress Protection (IP) rating	67
Operational temperature range	-40°C to +80°C
Storage temperature range	-40°C to +80°C
Humidity range	0 to 100% non-condensing
<b>ISO 9060 Fast Response Class C</b>	

**Array structure Specifications:**

Manual operate array structure Dual axis
Size: 4 meter x 4 meter
Material: G.I
SPV Module Capacity : 3000 Wp

**Data Logger Specifications:**

Communication	Modbus (TCP, UDP) Ethernet Modbus RTU RS-232 serial interface RS-485 Serial Interface
ETHERNET protocols	DHCP DNS NTP FTP FTPS SNMP HTTP HTTPS SSH
Visualization	Web Visu
Operating system	Real-time Linux (with RT-Preempt patch)
CPU	Cortex A8; 600 MHz
Programming languages per IEC 61131-3	Instruction List (IL) Ladder Diagram (LD) Function Block Diagram (FBD), Continuous Function Chart (CFC) Structured Text (ST) Sequential Function Chart (SFC)
Baud rate (communication/fieldbus 1)	10/100 Mbit/s
Baud rate	ETHERNET: 10/100 Mbit/s
Transmission medium (communication/fieldbus)	ETHERNET: Twisted Pair S-UTP; 100 Ω; Cat. 5; 100 m maximum cable length
Main memory (RAM)	256 MB
Internal memory (flash)	256 MB
Non-volatile hardware memory	128 Kbytes
Non-volatile software memory	128 Kbytes
Memory card type	SD and SDHC up to 32 GB
Memory card slot	Push-push mechanism; Cover lid (sealable)
Number of modules per node (max.)	250
Number of modules without a bus extension (max.)	64
Input and output (internal) process image (max.)	1000 Worte/1000 Worte
Supply voltage (system)	DC 24 V(-25 ... +30 %); via pluggable connector (CAGE CLAMP® connection)
Input current (typ.) at nominal load (24 V)	550 mA
Total current (system supply)	1,700 mA
Isolation	500 V system/field
Connection technology communication/fieldbus	Modbus TCP/UDP: 2 x RJ-45; Modbus RTU: 1 x D-sub 9 socket; RS-232 serial interface/ RS-

	485 serial interface:
Surrounding air temperature (operation)	0 ... 55 °C
Protection type	IP20
Operating altitude	without temperature derating: 0 ... 2000 m; with temperature derating: 2000 ... 5000 m (0.5 K/100 m); 5000 m (max.)
Relative humidity (without condensation)	95 %
Vibration resistance	4g per IEC 60068-2-6
Shock resistance	15g per IEC 60068-2-27
EMC immunity to interference	per EN 61000-6-2, marine applications
EMC emission of interference	per EN 61000-6-3, marine applications
Exposure to pollutants	Per IEC 60068-2-42 and IEC 60068-2-43

**Panel Board Specification**

**Measurement Module**

<b>Delivery valve controller with pressure measurement module with communication interface</b>	
Measurement accuracy	0.3%FS
Input	4 - 20 mA (from Pressure transmitter )
Output	4- 20 mA to control valve
Power supply	100~240VAC, -15%, +10% / 50~60Hz;
Power consumption	≤5W
Operating ambient: Temperature	-10~60°C.
Humidity	≤90%RH
Communication	Modbus RTU RS485
Electromagnetic compatibility (EMC)	±4KV/5KHz according to IEC61000-4-4 (Electrical Fast Transient); 4KV according to IEC61000-4-5 (Electrical Surge).
Sampling period	8 times per second

**Pyranometer Measurement Module with communication interface**

Measurement accuracy	0.3%FS
Resolution	0.1°C
Range	-50to 1300°C
Power supply	100~240VAC, -15%, +10% / 50~60Hz;
Power consumption	≤5W
Operating ambient: Temperature	-10~60°C.
Humidity	≤90%RH

Communication	Modbus RTU RS485
Electromagnetic compatibility (EMC)	±4KV/5KHz according to IEC61000-4-4 (Electrical Fast Transient); 4KV according to IEC61000-4-5 (Electrical Surge).
Sampling period	8 times per second

<b>Panel Capacity</b>	<b>50 A</b>
<b><u>Safety Equipment</u></b>	
DC SURGE PROTECTOR	AS per panel specification
DC CHANGEOVER SWITCH (For array input / Simulator input )	AS per panel specification
DC MCB	AS per panel specification

**DC voltage & Current Measurement specification**

Parameter	Voltage Current Power
Communication	RS485 , Modbus RTU
Display	Three line high-definition LCD display
Voltage Range (Direct input )	0 to 1000V
Current Range (input via shunt)	0 to 50000A (based on shunt selection)
Current Input via shunt	50 to 100 mV
Voltage Accuracy	0.2 %
Current Accuracy	0.2 %
Power Consumption	3W (typical value)



Power supply	(P1)100-240Vac, 50/60Hz, 100-300Vdc
Operation Temperature	-25°C to +70°C
Storage Temperature	-40°C to +85°C
Humidity	5% to 95%Non-condensing
Safety Standard	IEC 61010-1
EMC Standard	IEC 55011, IEC 61000-6-2, IEC 61000-3-2, IEC 61000-3-3

**Computer system Specifications:**

Monitor	IPS LED monitor 19 inch
UPS	1 KVA on line UPS
Printer	Laser Printer (For A4 size paper )
OS	Windows 10
Antivirus	Anti-virus with 1year subscription
<b><u>CPU</u></b>	RAM – 2 GB HDD -1 TB Processor – intel i5 DVD-RW drive, with keyboard and mouse

<u>SOLAR PUMP TESTING SOFTWARE</u>
<p><b><u>Data logging of following parameter</u></b></p> <p>DC voltage DC Current Ambient Temperature PV module temperature Flow (lpm) Flow Totalizer(L) Delivery Pressure Horizontal Irradiance Tilt Irradiance</p>
<p><b>Login Module</b> <b>Test loop selection module</b> <b>Data Storage module</b> <b>Report Generation module as per MNRE/IS Standard</b> <b>Graph view for IV curve</b></p>

**List of Instruments.**

Electromagnetic flow meter	25 mm - 1no, 10 to 283 lpm (For submersible) 50 mm – 1no, 41 to 1166 lpm (For submersible) 80 mm – 1no, 100 to 3000 lpm (For submersible) 65 mm – 1 no, 66 to 2083 lpm (For surface)
Pyranometer	For Horizontal irradiance - 1 no For Tilt irradiance- 1 no
Communication device for data logger	1 no
Delivery Pressure Transmitter	4 no's(0 to 30 bar), 1 no (0 to -1 Bar)
Modulating Control Valve	25 mm - 1no (For submersible) 50 mm – 1no (For submersible) 80 mm – 1no (For submersible) 65 mm – 1 no (For surface)
Panel Board( Measurement and control panel )	2 no's
Solar Array Simulator	2 no's
Array Structure	4 no's
Temperature Sensor with module	2 no's
Pyranometer Measurement Module with communication interface	2no's
Delivery valve controller with pressure measurement module with communication interface	4 no's
Pipe setup with necessary support and cable and cable tray	25 mm - 1no (For submersible) 50 mm – 1no (For submersible) 80 mm – 1no (For submersible) 65 mm – 1 no (For surface)

## Performance Statement Form (For the last three years)

Name of Bidder: \_\_\_\_\_

Order No. & Date	Client	Contact person/ phone	Description & quantities of ordered items	Value of order (in Rs Lakhs)	Date of completion		Satisfactory completion
					As per contract	Actual	

Note: Please attach documentary proof (client's letter or certificate) in support of satisfactory completion of above orders. Minimum 2 Customers ( use extra sheet if required).

\_\_\_\_\_  
Signature and seal of the Bidder

\_\_\_\_\_  
Date

(Please submit in separate sealed envelope)

Ref No.

Date:

**PRICE - BID**

To,  
General Manager,  
NSIC Technical Services Centre -Rajkot  
80- Feet Road, Aji Industrial Area, Bhavnagar Road,  
Rajkot -.360003

**Subject: Purchasing of solar water pump testing facility set up at NTSC-  
Rajkot**

**Tender No. NTSC/RAJ/SWP/2020-21/01.**

S No	Item	Basic Price (in Rs)	Taxes (in Rs)	Other Charges (if any) (in Rs)	Total (in Rs)
1.	Supply, Installation, testing and commissioning of a new 25 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m (Including Pipe setup with necessary support and cable and cable tray)				
2.	Supply, Installation, testing and commissioning of a new 50 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m . (Including Pipe setup with necessary support and cable and cable tray)				
3.	Supply, Installation, testing and commissioning of a new 80 mm size submersible test pump setup with arrangement of Flow meter, Control Valve and pressure transmitter to simulate the head up to 300 m. (Including Pipe setup with necessary support and cable and cable tray)				
4.	Supply, Installation, testing and commissioning of a new 65 mm size surface test pump setup on above Rooftop with arrangement of Flow meter, Control Valve and pressure transmitter 02 nos (one for delivery and second for suction ) to simulate the head up to 300 m. (Including Pipe setup with necessary support and cable and cable tray)				
5.	Supply, Installation, testing and commissioning of 2 nos. of Solar array simulator of Capacity (1000V, 15A) , Suitable for up to 10 hp three phase, Simulation of multiple solar cell material's I-				

	<p>V characteristic (fill factor) Simulation of dynamic irradiation intensity and temperature level from clear day to cloud cover conditions. Shadowed I-V curve output &amp; Dwell time 1-15,000 s Static &amp; dynamic MPPT efficiency test. Support up to six channel SAS control for mutli-MPPT testing. Output Current 0 to 15A , Output power 15 kW</p>				
6.	<p>Supply, Installation, testing and commissioning of Data logging arrangement with software for all weather and power data. (Vdc, Idc, DC Power, , tilted radiation, wire to water efficiency, horizontal radiation, Instant flow with totalizer , delivery and suction pressure ,ambient temperature, module temperature). All the data should be instantaneous data must be logged with maximum 1 minute time interval</p>				
7.	<p>Supply, Installation, testing and commissioning of array structure 4x4 mtr ,3000 Wp capacity, Suitable size of cable laying from Array mounting structure to control room's panel board .installation and commissioning of pyranometer 2 nos. one for Horizontal irradiance and one for Tilt irradiance with Pyranometer Measurement Module 02 nos with communication interface(Including cable). Supply, Installation, testing and commissioning of Temperature Sensor with module 2 nos.(One for PV module, one in control room)</p>				
8.	<p>Supply, Installation, testing and commissioning of Panel Board- 02 nos. (Measurement and control panel) as per annexure- 1(x).</p>				
9.	<p>Supply, Installation, testing and commissioning of Computer System.- 02 nos. Color monitor, DVD drive, UPS, printer, Registered OS, Licensed Anti-virus, Software and data logging modules, data storing in data base.  Solar pump testing software. Data logging of following parameter:- DC voltage. DC Current. Ambient Temperature. PV module temperature. Flow (lpm). Flow Totalizer (L). Delivery Pressure. Horizontal Irradiance. Login Module. Test loop selection module. Data Storage module. Wire to water efficiency. Test Report Generation module as per MNRE/IS Standard. Graph view for IV curve.</p>				
10.	<p>All Equipment Installation with cable and laying the instruments and earthing as per standard IS3043., lighting arrester</p>				
11.	<p>Certificate: All the instruments must be calibrated from NABL accredited lab. Certificate must be valid for one year.</p>				

	Before installation all calibration Certificate shall be provided to NTSC-Rajkot.				
12.	The vendors must provide onsite full comprehensive warranty for a period of 36 months (three years) post installation. During this period they should provide all spare parts required for repair and maintenance. Along with repair maintenance service, warranty of three years against manufacturing defects shall be provided. Warranty should be provided by the vender. The NTSC-Rajkot is not liable to pay any extra charges on any account during warranty period.				
13.	Vendor shall provide minimum Five days adequate training to run the Solar Water pump test facility as per MNRE Guideline for handling and O&M work during and after completion of the work.				
<b>GRAND Total (in Rs) (figure)</b>					

Grand Total Amount (in words) Rupees:-

Note: The vendors must provide rate for onsite full comprehensive warranty for an ADDITIONAL period of 36 months (three years) after warranty period of 3years. During this period they should provide all spare parts required for repair and maintenance (in Rupees)	
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Signature: \_\_\_\_\_

Name of the Representative Submitting the Bid:

Designation:

Company Seal





## Annexure 4

### **Details of Account for Bid Security / EMD/Tender Fee.**

ACCOUNT NAME: NSIC Ltd

BANK NAME: State Bank of India

BANK A/C NO: 56068001625

BANK IFSC CODE: SBIN0060068