

Tender Price: Rs. 1,000/-

TENDER FOR
SOLAR POWER PLANT 50KW (GRID CONNECTED)

FOR SUPPLY, INSTALLATION &
COMMISSIONING OF

SOLAR POWER PLANT 50KW (GRID
CONNECTED)

IN

Northern Region Farm Machinery Training and Testing Institute,
Sirsa road, Hisar (HARYANA)

Phone and Fax No. 01662-276984
Email: fmti-nr@nic.in
Website: nrfmtti.gov.in

IMPORTANT DATES

Sr. No.	Particulars	Date and Time
1	LAST DATE FOR SALE OF TENDERS	28.12.2015 5.00PM
2	LAST DATE FOR SUBMISSION OF TENDERS	01.01.2016 4.00PM
3	OPENING OF TECHNICAL BIDS	04.01.2016 11.00AM
4	OPENING OF FINANCIAL BIDS AFTER SCRUTINY OF TECHNICAL BIDS	08.01.2016 11.00AM

FOR SUPPLY, INSTALLATION AND COMMISSIONING OF ONE NO. SOLAR POWER PLANT OF 50KW CAPACITY (GRID CONNECTED)

1. SCOPE OF WORK

Supply, installation and commissioning of **ONE NO. SOLAR POWER PLANT OF 50KW CAPACITY (GRID CONNECTED)**, complete in all respect with 5 years CMC/guarantee on the complete system and 25 years warranty for solar panel.

2. FIVE YEARS COMPREHENSIVE MAINTENANCE CONTRACT

1.0 The Comprehensive Maintenance Contract (CMC)

1.1 The Comprehensive Maintenance Contract shall include servicing & replacement guarantee for parts and components (such as electronics, Inverters and PV modules) of Solar Photovoltaic Power Plants for five years from the date of installation. For PV modules, the replacement guarantee is for twenty five (25) years.

1.2 The maintenance service provided shall ensure proper functioning of the system as a whole. All preventive/routine maintenance and breakdown/corrective maintenance required for ensuring maximum uptime shall have to be provided by the Manufacturer. Accordingly, the Comprehensive Maintenance Contract (CMC) shall have two distinct components as described below.

2.0 Preventive/Routine Maintenance

This shall be done by the company at least once in a every six months and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, tightening of all electrical connections, changing of tilt angle of module mounting structure, and any other activity that may be required for proper functioning of the Solar Photovoltaic Power Plant as a whole. The maintenance record shall be maintained properly and to be submitted to the Director on half yearly basis.

3.0 Breakdown/Corrective Maintenance

3.1 Whenever a complaint is lodged by the Institute, the supplier has to attend the same within a reasonable period of time (3 days) and in any case the breakdown shall have to be corrected within a period not exceeding ten days from the date of complaint.

3.2 .The date of CMC maintenance period shall begin on the date of actual commissioning of Solar Photovoltaic Backup Power system.

3. WARRANTY

3.1 The mechanical structures, electrical works including inverter/charge controllers/ distribution boards/digital meters/ switchgear etc. and overall workmanship of the SPV power plants must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years.

3.2 PV modules used in solar power plants must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

4. SPECIFICATIONS OF SYSTEM

The specifications of the 50KW Solar Power Plant are enclosed as **Annexure-I**.

5. ELIGIBLE SUPPLIERS

- i. The manufacturers (means manufacture of one of any i.e. SPV modules and Charge Controller, PCU) having SPV modules and charge controller, PCU tested and approved by one of the IEC/ NABL/BIS/ MNRE GOI Accredited Testing Calibration Laboratories issued on or after 1st April 2009.
- ii. Manufacturers should have the experience for the supply and installation of solar power plants 50 KW or more to any State/Central Nodal agency/Govt. Department and others during last three years.
- iii. Tenders received without test certificate(s) of module will be rejected out-rightly and no correspondence will be entertained in this regard.
- iv. The manufacturer should have average turnover of more than Rs. 2.00 crore during the years 2013-14 and 2014-15. Certificate from Chartered Accountant shall be enclosed with the offer.

6. EARNEST MONEY DEPOSIT

- i. The tender should be accompanied with earnest money for the value of Rs.50,000/- (Rupees fifty thousand only) in the form of demand draft in favor of Director, Northern Region Farm Machinery Training and Testing Institute, Sirsa road, Hisar (HARYANA)
- ii. The offers without EMD will be rejected without assigning any reason as being non-responsive.
- iii. EMD of unsuccessful tenderer shall be returned after award of the contract /order. No interest will be paid on the earnest money.

7. PAYMENT TERMS

- (i) 90% on supply, installation and commissioning of the power plants supported with JCR duly verified by P.O. Hisar.
- (ii) 10% after 60 days from the date of commissioning against performance bank guarantee valid for five years from commissioning of the devices.

8. OTHER TERMS AND CONDITIONS

- (i) The make and serial number of PV module used must be recorded by the manufacturer in a permanent manner.
- (ii) The manufacturer should issue excise gate pass for the products sold so that sale of product can be independently verified.
- (iii) Any left out specification(s) (if any) shall be as per the guidelines of the Grid Connected Scheme of the JNNSM of the MNRE, GOI issued time to time with latest amendments.

- (iv) Replacement of defective cables/ wires, indoor lighting, fan, computer, printers etc. shall be carried out by the user as usual. Contractor shall be responsible for generation & supply of power to the existing electric gadgets of the user.
- (v) If any new equipment/ gadget is installed/ added with the power supply of the solar system, user shall inform to the contractor before installation/ adding the same and it may be connected with the system only if contractor permits for the same. Contractor shall not be responsible for any defect / fault arises in the equipment (s) due to unauthorized connection.
- (vi) A proper record shall be maintained by the contractor for each site/ project which includes detail of equipments/ load connected generation & consumption of power, detail on breakdown, nature of defect, reason of defect, date of receipt of complaint and date of removal of defect etc.
- (vii) Contractor shall also install suitable energy meters with system.
- (viii) All fittings, assemblies, accessories, hardware items, civil & electrical works & safety devices as required shall be deemed to be included whether such items are specially mentioned in the DNIT or not.

9. PERFORMANCE SECURITY DEPOSIT

- (i) The EMD of successful bidder will be adjusted in the security deposit of 10 % of the total order value to be deposited by the contractor & it will be kept till the successful installation and commissioning of the systems. The security deposit will be released after submission of 10% performance bank guarantee as per clause-7(ii) valid for five years from commissioning of the power plants.

10. VALIDITY OF BID

The bids shall be valid for a period of 90 days from the date of opening of tender.

11. SERVICE TO BE PROVIDED DURING WARRANTEE PERIOD

During warrantee period, the firm shall ensure proper functioning of the systems. All preventive/ routine maintenance and breakdown / corrective maintenance required for ensuring maximum uptime shall have to be provided. During the warrantee period, complaint, if any, forwarded to the supplier against the system, will have to be attended within 10 days of forwarding such complaints. Supplier shall maintain proper record of the complaints. The correspondence of such complaints should preferably be made through e-mail. If the supplier failed to repair/ replace the defective system within 30 days of forwarding the complaint, then Director may consider repairing / replacing such defective parts/system on the cost of the supplier.

12. TIME SCHEDULE, PENALTY/LIQUIDATED DAMAGES

These systems are to be supplied, installed and commissioned within 45 days of time from the date of issue of work order.

The time for and date of delivery or dispatch stipulated in the supply order shall be deemed to be the essence of the contract, and should the contractor fail to deliver or dispatch any consignment within the period prescribed for such delivery or dispatch stipulated in the supply order, the delayed consignment will be subject to 2% penalty per consignment per month recoverable on the value of the stores supplied. In case of non-payment of the contractor, recovery will be made from his bills or amount of Earnest money or security deposited with Director provide also that:

- a. No recovery of penalty will be made if the Indenting officer accepts the delayed supplies by extending the delivery period up to two weeks by recording in writing that the exceptional circumstances were beyond the control of the supplier and there was no loss to the Government.
- b. When the delay on the part of the supplier is of more than two weeks, the matter for extension of delivery period will be considered only if the supplier gives a certificate that there are genuine reasons for delay & then the case will be decided on merits by the Director. The extension allowed by the Director to the extent of purchasing powers delegated to him. In case the delivery period is amended, no penalty for supplies made during the extended period will be recovered from the supplier.
- c. On the failure of the suppliers to make supply within the extended period or otherwise, risk purchase at the cost of the supplier will be made by the Director within two months of the expiry of stipulated delivery period by inviting short terms quotations from the Registered and other known suppliers. The difference of excess cost thus, incurred will be recovered from the supplier from his pending bills, earnest money or security whichever is available. This procedure will be adopted after serving a registered notice to the supplier to supply stores within 15 days.

(ii) The Contractor shall not;

- a. Assign or sublet the contract without written approval of the officer sanctioning the contract.
- b. Disclose details of the conditions governing this contract to unauthorized persons (Indenting against this contract is permissible only for the bonafide use of Governments departments and quasi public and not for private parties or for the private use of the Government officers).

(iii) In the event of the contractor failing duly and properly to fulfill or committing breach of any of the terms and conditions of the contract or repeatedly supplying goods liable to rejection hereunder or failing, declining, neglecting/ or delaying to comply with any demand or requisition or otherwise not executing the same in accordance with the terms of this contract, or if the contractor or his agents or servants being guilty of fraud in respect of the contract or any other contract entered into by the contractor or any of his partners or representatives thereof with Government directing, giving, promising or offering any bribes, gratuity, gift, loan, perquisite, reward or advantage pecuniary or otherwise to any person in the employment of Government in any way relating to such officers or person of persons, office or employment or if the contractor or any of his partners become insolvent or apply for relief as insolvent debtor or commence any insolvency proceedings or make any composition with his/ their creditors or attempts to do so then without prejudice to Government rights and remedies otherwise,

Director shall be entitled to terminate this contract forthwith and to blacklist the contractor and purchase or procure or arrange from Government's stocks or otherwise at the contractor's risk and at the absolute discretion of the Director as regards the manner, place or time of such purchases, such supplies as have not been supplied or have been rejected under this agreement or are required subsequently by Government there under and in cases where issues in replacement are made from Government's stocks or supplies, the cost of value of stocks or supplies together with all incidental charges or expenses, shall be recoverable from the contractor on demand and the contractor shall not be entitled to benefit from any profit which may accrue to Government.

13. INSPECTION OF MATERIAL

The material will be dispatched by the supplier after inspection by constituted committee alongwith ADC-cum-PO Hisar or his representative at site and approval by the Competent Authority. The supplier shall provide without any extra charge, all materials, tools, testing equipments, labour and assistance of every kind which the inspecting officer may consider necessary for any test or examination which he may require to be made on the supplier premises.

Testing charges if any charged by the approved testing centre/ Lab for the checking of performance will be borne by the firm.

14. SUBMISSION OF TENDER

- i) Sealed tender should be submitted in two parts i.e. **Part-I (Technical Bid)** in the Annexure-II and **part-II (Financial Bid)** in the Annexure-III. The firm should submit their offers in two separate sealed envelopes, marked on one envelop as "Part-I "Technical bid" and on other envelope as "Part-II: Financial bid". These envelopes should again be sealed in a covering envelope along with forwarding letter, super scribed on top with "Offer for supply, installation and commissioning of 50KW Solar Power Plant (Grid Connected).
- ii) Offer should be addressed to Director, Northern Region Farm Machinery Training and Testing Institute, Sirsa Road, Hisar by designation not by name.
- iii) Director shall resume no responsibility for misplacement or pre-mature opening of any part of tender, in case of above instructions or not complied by the tenderer.
- iv) Any offer received after the deadline for submission of offers shall be rejected and returned unopened to the tenderer.
- v) All the pages of tender documents, technical specifications, bids, supporting documents etc. shall be indexed, numbered and duly signed by the authorized signatory and company seal should be affixed on each page. Any part of the tender which is not specifically signed by the authorized signatory and not affixed with company seal shall not be considered for the purpose of evaluation.
- vi) The offers should be signed and sealed by the tenderer or his authorized representative. The names and designation of all persons signing shall be typed or printed below the signature.
- vii) Failure of furnish all information and documentary evidence as stipulated in the tender document or submission of an offer i.e. not substantially responsive to the tender document in all respects shall be summarily rejected.

15. DOCUMENTS TO BE ENCLOSED WITH THE OFFER

Part-I & Part-II of the tender should comprise the following documents:

i) Technical bid (Part-I)

The Technical bid (Part-I) of tender shall be offered and furnished complete in all respect in **Annexure-II** along with following documents:

- a. Forwarding letter in Proforma-I
- b. Minimum eligibility condition-qualification in Proforma-II.
- c. Photocopy of partnership deed in case of partnership firm.
- d. Power of attorney for authorized signatory in case of companies.
- e. Test certificate of module from IEC/NABL/ MNRE, Govt. of India approved test centre.
- f. Details of past experience against supply made to different state nodal agencies in Proforma-III.
- g. Photocopies of certificate of satisfactory performance of solar power plants supplied to state/central nodal agencies/Govt. departments along with copy of purchase order.
- h. Earnest money deposit.

ii) Financial bid: Part-II

- a. The price of solar power plant in full and complete set including all parts inclusive of supply, installation, commissioning, packaging, transportation, FOR destination, all taxes & levies, octroi, VAT etc. should be quoted in **Annexure-III** (Financial bid).
- b. Price shall remain firm and fixed. Price variation clause is not acceptable.
- c. Any conditional discounts on the prices offered will not be entertained / considered.
- d. Offers should be quoted in lump sum inclusive of all taxes till the execution of the project and conditional offers with taxes will be rejected out rightly.

16. OPENING AND EVALUATION OFFERS

- i) Part-I: Technical bid will be opened on 02.01.2016 by the purchase committee of officers at the institute in the presence of tenderers or their authorized representative who chose to attend the meeting.
- ii) Director, if required, may at its discretion obtain clarifications on offer by requesting such clarifications from any or all the tenderers. Such requests for clarification and the response shall be in writing.
- iii) The Part-II: Financial bid of only those tenderers, whose offer technically and commercially acceptable after evaluation and scrutinized by purchase committee will be opened. The date to open the financial bid will be 08.01.2016.

17. OTHER TERMS AND CONDITIONS

- i. The offer shall be submitted on original tender form issued by this office, conditional tender and tender not accompanied by EMD shall not be accepted.
- ii. The rates quoted should be FOR destination inclusive of all taxes, octroi, VAT etc.
- iii. In the event of bid being submitted for a firm, it must be signed separately by each members thereof, or in the event of the absence of any partner, it must be signed on his behalf by a person holding a Power of Attorney authorizing him to do so. In case of a company, the quotation should be executed in the manner laid down in the said Companies Article of Association. The signature on the quotation should be deemed to be authorized signatures.

- iv. All columns of the technical and financial bid shall be duly filled in the rates shall not be overwritten and be both in figures and words.
- v. All corrections must be signed by the tenderers.
- vi. Director reserves the right to distribute the order/place the order on more than one supplier/firm.
- vii. The tenders shall be opened in the presence of the bidders who wish to be present at the time of opening of technical as well as financial bid.
- viii. The offer shall be accompanied with a set of complete technical literature along with operation and maintenance manual in English and Hindi.
- ix. Material shall be strictly as per DNIT specifications. If there is any left out specification, the same shall be considered as per the MNRE specification.
- x. The maker of module should be strictly as per the make mentioned in the test reports submitted along with the offer. For variation of any make, test report of the same is to be provided with prior approval of Director.
- xi. The Director will have the right of rejecting all or any of the quotation without assigning reason thereof.

Read and accepted.

I/ We hereby quote to supply the goods and materials specified in the underwritten schedule in the manner in which and within the time specified as set forth in the conditions of contract at the rates given in the financial bid.

The conditions will be binding upon me / us in the event of acceptance of my / our tender.

I / We herewith enclose Earnest Money deposit of Rs.50,000/- (Rupees fifty thousand only) and should I / We fail to execute the work order released by Director in case our bid is accepted, I / We hereby agree that the above sum of earnest money shall be forfeited by the Director, NRFMTTI, Hisar.

(Signature of the authorized signatory)

Name:

Designation& Company seal:

PROFORMA-I

**Specimen Format for forwarding letter
(To be submitted by tenderers on the official letterhead of the company)**

No.

Dated:

To

Director,
Northern Region Farm Machinery Training
and Testing Institute,
Sirsa Road, Hisar

Subject: - **Offer in response to Notice Inviting Tender No. _____ for supply, installation
& commissioning of Solar Power Plant (Grid Connected) of 50KW capacities.**

Sir,

We are hereby submitting our offer in compliance with terms and conditions of the Notice Inviting Tender No._____. As specified, the offer has been submitting in two different envelopes duly marked and seal.

We also further declare:

- a) That we are submitting this offer under the above mentioned notice after having fully read and understood the nature of the work and having carefully noted all the specifications, terms and conditions laid down in the tender document.
- b) That we have never been debarred from executive similar type of work by any central/state/public sector undertakings/departments
- c) That we shall execute the offer work as per specifications, terms and conditions of the tender document.
- d) That our offer shall remain valid for placement of purchase order up to 90 days from the opening of bids.

Yours faithfully,

(Authorized signatory)

Name:

Designation:

Company seal:

PROFORMA-II

**Specimen Format for Confirmation of minimum eligibility condition
(To be submitted by tenderers on the official letterhead of the company)**

No.

Dated:

To

Director,
Northern Region Farm Machinery Training
and Testing Institute,
Sirsa Road, Hisar

Subject: - **Confirmation of minimum eligibility condition for Notice Inviting Tender No. _____ for supply, installation & commissioning of Solar Power Plant (Grid Connected) of 50KW capacities.**

Sir,

Having examined the tender document of No. _____, we hereby confirm the following towards the minimum eligibility condition to participate in the tender of Solar In **Solar Power Plant (Grid Connected) of 50KW capacities.**

- i) We have valid test certificate of SPV module from _____ tested during _____ and attested copy of the same is enclosed herewith.
- ii) We have valid test certificate of charge controller from _____ tested during _____ and attested copy of the same is enclosed herewith.

Yours faithfully,

(Authorized signatory)

Name:
Designation:
Company seal:

PROFORMA-III

Information in support of meeting eligibility conditions

Details of orders received and executed by manufacturer/supplier for supply of solar power plants to different govt. organizations/state nodal agencies/others in the past: three years

Sr. No.	Name of agency/ organization	P.O. NO./date ordered Qty.	Capacity and no's of systems supplied	year in which the systems were commissioned
1	2	3	4	5

Note: (1) Attach photocopies of Purchase orders
(2) Attach photocopies of certificate of satisfactory performance issued by Concerned Agency/Organization

Signature of Authorized Signatory

Name _____

Designation _____

Company seal _____

SPECIFICATION OF 50 KW_p SPV POWER PLANT (GRID CONNECTED)**1. TECHNICAL SPECIFICATIONS**

ITEM	DESCRIPTION
SPV Module	<ul style="list-style-type: none"> • The photovoltaic modules should be Mono /Poly Crystalline with a total array capacity of 50 KW. • The photovoltaic modules should be one of the following make: TATA BP, CEL, Moser Bear or BHEL make. • The Photovoltaic modules must be qualified as per IEC 61215 (revised) / IS 14286 standards and in addition, the modules must conform to IEC 61730-1 requirements for construction & Part-2 requirements for testing, for safety qualification. • The PV modules must be tested and approved from any of the NABL/BIS/ MNRE Accredited Testing Calibration Laboratories. • The supplier shall provide performance guarantee for the PV modules used in the power plant must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.
No's of Modules	218 Nos. each of minimum 230 Wp or above wattage. Module capacity less than minimum 230 watts will not be accepted. Necessary I-V curves of the SPV Modules are required to be furnished.
Nominal Capacity	50KW
System autonomy	1+2 day
Power Conditioning Unit	<p>The Power conditioner unit of capacity 50 KW should convert DC power in to AC power must confirm to standards IEC 61683 for efficiency. A 24 volt DC to 230 volt AC inverter will have following features:</p> <ul style="list-style-type: none"> • MOSFET based PWM modified Sine Wave. • Wide input voltage range • Output voltage $230 \pm 2\%$ • Out frequency: $50 \text{ Hz} \pm 0.5 \text{ Hz}$ • Efficiency: $> 90\%$ at full load • Low power factor: 0.8 lagging to unity. • Ambient temperature: 0-50 deg. Cent • Relative humidity: 90% Non-condensing • Protections: <ul style="list-style-type: none"> - Over voltage (automatic shut down) - Under voltage (automatic shut down) - Overload - Short circuit (circuit breaker & electronics protection against sustained fault). • Indications: <ul style="list-style-type: none"> - Battery low

	<ul style="list-style-type: none"> - Overload - Inverter ON - Input & output voltage - Input & output current - Frequency - Power output • Cooling: Air cooled
SPV Charge Controller	<p>A suitable SPV charge controller having following features, specifications be provided</p> <ul style="list-style-type: none"> • MPPT /pulse width modulation (PWM) charge controller • Both calibrated scales and test points to allow precise adjustments and setting verification • Electronics protection for <ul style="list-style-type: none"> - Short circuit - Overload - Over temperature - Reverse polarity • Auto resetting electronic over current protection • LCD Digital display with back lighting and continue display of <ul style="list-style-type: none"> - Battery voltage - DC Current - Cumulative AH - Separating resettable “trip” AH measurement - Integrated charge controller and Inverter will be preferred.
Junction boxes	<ul style="list-style-type: none"> • The junction boxes shall be dust and water proof and made of thermoplastic the terminals will be connected to copper lugs or bus-bar of proper sizes. The junction boxes will have suitable cable entry points fitted with the cables. Suitable markings shall be provided on the lugs or bus-bars for easy identification at cable ferrules will be fitted at the cable terminations points for identification. Each main junction box shall be fitted with appropriate rating reverse blocking diode. The junction boxes shall be of reputed make. • The junction boxes shall have suitable arrangement for the following: <ol style="list-style-type: none"> a) Combine groups of modules into independent charging sub-arrays that will be wired into the controller. b) Provide arrangement for disconnection for each of the groups. c) Provide a test point for each sub group for quick fault location. d) To provide group array isolation. e) The rating of the JBS shall be suitable with adequate safety factor to inter connect the Solar PV array.
Structure for module frame	<p>Modules shall be mounted on supporting structure made out of galvanized MS angle of required structural strength. (hot dip/galvanized) either on the roof top or at ground as per the site requirement Structure : -</p> <ol style="list-style-type: none"> 1. The size of M.S. (Galvanized) angle should be 50 x 50 x 6 mm. The structures are to be fitted either on the roof top or at ground properly and south faced. It should withstand wind speed up to 200 Km/hour.

	<p>2. Foundation – The legs of the structure made with hot dip GI angles will be fixed and grouted in the RCC foundation columns of size 300mmx300mm made with 1:2:4 cement concrete. The minimum ground clearance from the lowest part of any module shall be 500 MM. While making foundation design due consideration will be given to wait of module assembly, maximum wind speed of 200 km per hour.</p> <p>3. The work includes necessary excavation, concreting, back feeling, shoring and shuttering etc.</p> <p>4. Brick paving of first class bricks with cement mortar (1:6) as per PWD specifications on edge type plate form is to be provided under the modules structure area with minimum 1 meter more than structure.</p>
Connecting cables	All required PVC insulated copper cables (ISI marked) for 50 Kw SPV Solar Power Plant Grid Connected must be as per specification and standards recommended by MNRE.
Indoor wiring	All indoor wiring is to be done in a casing capping system. As and when required flexible pipe may also be used.
Lighting protection	Suitable nos. of lighting arrestors shall be provided in the array field.
Earthing protection	Each array structure and all metal casings of the plant etc. shall be earthed properly.
Tool Kit and Spares	One necessary tools kit and spares will have to be provided by the supplier which should have compulsory one RFID Tag Meter so as to read the RFID Tag of SPV modules supplied.
Display Board	<p>A display board of size 6 ft x 4 ft made of MS 40mmx40mm square pipe and flexes is to be erected at the plant site indicating;</p> <p>Capacity of Solar Power Plant : 50 Kw</p> <p>Specifications</p> <p>Safety Tips</p> <p>Maintenance schedule</p> <p>Name of the Supplier : M/s.....</p> <p>Contact numbers :</p>

2. CODES AND STANDARDS

The BOS items / components of the SPV power plant must conform to the latest edition of IEC/ equivalent BIS Standards as specified below:

BOS item / component	Standard Description	Standard Number
Power Conditioning Unit Inverter	Efficiency Measurements Environmental Testing	IEC61683 and must additionally conform to the relevant national/international Electrical Safety Standards IEC60068 2 (6, 21, 27, 30, 75, 78)
Charge controller/ MPPT units*	Design Qualification Environmental Testing	IEC 62093 IEC 60068 2 (6, 21, 27, 30, 75,78)
Storage Batteries	General Requirements & Methods of Test Tubular type	IEC 61427 IS 1651/ IS 13369
Cables	General Test and Measuring Methods PVC insulated cables for working voltages upto and including 280 V, UV resistant for outdoor installation	IEC 60189 IS 694 / IS 1554 IS/IEC 69947
Switches / Circuit Breakers / Connectors	General Requirements Connectors-safety	IS/ IEC 60947 part I, II & III EN 50521
Junction Boxes/ Enclosures	General Requirements	IP 65 (for outdoor) / IP/21 (for indoor) IEC 62208
SPV System design	PV Stand-alone Systems design verification	IEC 62124
Installation Practices	Electrical Installations of buildings-requirements for SPV power supply systems	IEC 60364-7-712

*Must additionally confirms to the relevant national/ International Electrical Safety Standards.

3. IDENTIFICATION AND TRACEABILITY

Each PV modules used must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

- (i) Name of the Manufacturer of PV Modules
- (ii) Name of the Manufacturer of Solar Cells
- (iii) Month and year of the manufacturer (separately for solar cells and module)
- (iv) Country of origin (separately for solar cells and module)
- (v) I-V curve for the module
- (vi) Peak Wattage, I_m , V_m and FF for the module
- (vii) Unique Serial No and Model No of the module
- (viii) Date and year of obtaining IEC PV module qualification certificate
- (ix) Name of the test lab issuing IEC certificate
- (x) Other relevant information on traceability of solar cells and module as per ISO 9000 series.

**TENDER FOR SUPPLY, INSTALLATION & COMMISSIONING OF SOLAR POWER PLANT
(SPV) 50KWp (GRID CONNECTED) GROUND MOUNTED SYSTEM**

AT N.R.F.M.T.&T.I, HISAR(HARYANA) 125001 INDIA

To be submitted up to 4.00 PM on or before the due date i.e. 01.01.2016

Tender document No: 6-17/15-CPS

Date : _____

From: M/s.

To,
The Director
Northern Region Farm machinery Training & Testing Institute,
Sirsa Road, Hisar(Haryana) 125001

Sir,

With reference to your Tender Notice dated _____ we offer our rates for the Supply,
Installation & Commissioning of Solar Power Plant 50kw (Grid Connected).

S.No.	Name & description of item	Make & Model Type of equipment etc.	Whether tested and approved by one of the IEC/ NABL/BIS/ MNRE GOI Accredited Testing Calibration Laboratories (pl. give details)	Qty.	Unit Rate Rs.	Total Cost Rs.
1.	INSTALLATION & COMMISSIONING OF SOLAR POWER PLANT 50KW (GRID CONNECTED) GROUND MOUNTED SYSTEM	-	-	01 No.	-	-

N.B: If required, separate sheet may be added to give more technical details of equipments. These should be on the letter heads of tenderer duly stamped and signed.

List of enclosures:-

- 1.
- 2.
- 3.
- 4.

(Authorized Signature)
with full name & designation
& seal