TENDER DOCUMENT NO. DTE/Pur/401/12/552

TENDER FOR

DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING WITH FIVE YEARS OF COMPREHENSIVE MAINTENANCE CONTRACT FOR SOLAR PHOTOVOLTAIC POWER PLANTS

IN

EIGHTEEN INDUSTRIAL TRAINING INSTITUTES IN J&K STATE

(AS PER LIST ENCLOSED)

AGGREGATE CAPACITY 1247.52 KW

DIRECTORATE OF TECHNICAL EDUCATION J&K
BEMINA BYE PASS SRINAGAR-190017

SRINAGAR PHONE NO: 0194-2491613 FAX NO: 0194-2491668
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INDEX

Sr. No.	Description	Page No.
1.	Tender form	3
2.	Tender notice	4
3.	Detailed tender notice	5
4.	1. Eligibility criteria	5
5.	2. Scope of the work:	6
6.	3. Instructions to bidders	8
7.	4. Procedure for opening the bids	10
8.	5. Evaluation of offer	11
9.	6. General terms & conditions:	12
10.	Annexure – 1: Details of earnest money deposit	18
11.	Tenderer's general information	19
12.	Annexure – 2: Declaration	20
13.	Annexure – 3: Company profile	21
14.	Annexure – 4: Work experience	24
15.	Annexure –5: Financial bid	25
16.	7. Technical specification	27
17.	Annexure-6: Technical bid	44
18.	Annexure-7: Site visit report letter	46
19	Annexure-8: List of ITI's where Solar Power Plants are to be installed with capacity	47
20	Annexure-9:Control Room & Battery Room drawings	48
21	Check list	49

(TO BE SUBMITTED ALONG WITH TECHNICAL BID)

TENDER DOCUMENT NO. _____

TENDER FORM

The Director,
Technical Education,
J&K, Bemina Bye Pass Srinagar.

We the undersigned (herein after called as Contractor/Vendors/Suppliers/Manufacturer) hereby offer to execute supply of items as per specification against which we have quoted our rates and for which this tender may be accepted at the rates stated there in and subject to the terms & conditions set forth for

Such items as may be ordered by Director Technical Education J&K.

Date this _____ Day of_____

Signature of Contractor _____

Address_____

Seal of the tenderer

_____

_____

SIGNATURE AND STAMP OF THE TENDERER

TENDER NOTICE

TENDER DOCUMENT NO DTE/Pur/401/12/SD **Dt.** 5-09-2012

For and on behalf of Governor J&K State sealed tenders affixed with Rs. 5.00 revenue stamp are invited under two bid system, from firms only who are manufacturers of solar PV Power Plants/modules in India having valid test certificates from MNRE authorized test centres for their products for **Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract Of Eighteen Solar Photovoltaic Power Plant In ITI's Aggregate Capacity 1247.52 KW**

Period of issue of tender document	: **05-09-2012 to 25-09-2012** during office hours viz 10.00 AM to 4.00 PM
Cost of Tender Document (Non-Refundable)	: **Rs. 50,000/-** (Rs. Fifty Thousand only) non-refundable in the form of D.D drawn in favour of **Accounts Officer Directorate of Technical Education J&K** payable at Srinagar/Jammu from a nationalized bank only. If required by post Rs. 1000/- will be charged as postal charges. The tender document can be downloaded from DTE website (www.jkdte.nic.in, www.jkdte.org). In such case the tenderer shall enclose cost of tender document by separate D.D. along with tender in a separate envelop super- scribed "**Cost Of Bid Document**" In case of the units registered with department of Industries and Commerce the cost of tender document shall be in accordance with the J&K State industrial policy invogue.
Sale & Deposit of Tender	: Accounts Officer, Directorate of Technical Education J&K, Bemina Bye Pass Srinagar.
Estimated Cost	: **Rs. 32.45 CRORES** App.
Earnest Money Deposit	: 2% of the estimated cost for systems by D.D/C.D.R/ F.D.R in favour of Accounts Officer, **Directorate of Technical Education, J&K** payable at Srinagar/Jammu from a Nationalized bank. In case of the units registered with department of Industries and Commerce the earnest money shall be in accordance with the J&K State industrial policy invogue.
Security Deposit	: 10% of the total contract value, by D.D./C.D.R/ F.D.R / Bank Guarantee valid for a period of five years from a nationalized bank in favour of Accounts Officer, **Directorate of Technical Education J&K** payable at Srinagar/Jammu I from a Nationalized bank.
Period of Completion	: Supply of Material three months from the placement of the order and completion Six months from the date of placement of order.
Last Date of Submission	: 01-10-2012 in the office of Director Technical Education J&K, Bemina Bypass Srinagar
Date of Opening of Technical Bid	: 03-10-2012 in the office of Secretary to Govt. Technical Education and YSS department, room No _____ Civil Sectt, J&K Srinagar.
Date of opening of Financial Bid	: shall be communicated later on to qualified bidders

The Director Technical Education, J&K reserves the right to accept / reject any or all the tenders without assigning any reason thereof.

Director
Technical Education, J&K

SIGNATURE AND STAMP OF THE TENDERER

DETAILED TENDER NOTICE

Name of Work : **Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract Of Eighteen Solar Photovoltaic Power Plant in ITI's (Aggregate Capacity 1247.52 KW)**

1. ELIGIBILITY CRITERIA

1.1 Only such firms which have got their products tested and qualified by any of the three authorized test centers and who have submitted information to the test centre about the company along with a copy to the Ministry in the MNRE format will be eligible to participate.

1.2 The firm must have valid STCC/ VAT clearance certificate. *(Pl. attach copy of valid STCC/ VAT clearance certificate)*

1.3 The firm must have an average annual turnover of Rs 125.00 crore over last three years exclusively in the business of Solar P V Power Plants alone.
(Pl. attach copy of audited balance sheet for, 2009-10, 2010-11 and 2011-12)

1.4 The firm must have designed, manufactured, tested supplied, erected, commissioned minimum plant capacity of 500 KW (Cumulative) off Grid with 150 KW and above in Government Sector and which is/are in successful operation on the date of bid opening.
(Pl attach copies of PO's and satisfactory report from previous installations in support of the same)

1.5 The firm must have set up at least one solar power plant of 100 KW or above capacity in the premises of Government buildings/Corporate Sector buildings.

1.6 The firm must have adequate capacity to design, manufacture, test, supply, erect, and commissioning the power plant within the given time schedule.

(Pl furnish a brief write-up, backed with adequate data, explaining the available capacity and experience (both technical and commercial) for the manufacture and supply of the required systems and equipment within the specified time of completion after meeting all their current commitments.)

1.7 The products must conform to minimal technical requirements/ standards for off grid/standalone Solar PV Power Plants /Systems to be deployed under the Jawaharlal Nehru National Solar Mission.

(Pl. attach copies of recent test certificates from SEC/ other authorized Test Centres of MNRE, GOI as proof thereof)

1.8 The products/ systems/ devices quoted in tender should be as per MNRE specifications.

1.9 Consortiums are not allowed.

2.0 The bids of those firms/vendors who have defaulted/failed to execute similar type of orders or have supplied the material beyond the delivery period to J&K Energy Development Agency (State Nodal Agency) during last three years shall not be considered.

2 . 1 All above criteria should be strictly followed. Tenderer should quote only if he is eligible.

2. SCOPE OF THE WORK:

The broad scope of the work would include design, supply, installation, commissioning, providing manpower and 5 years of the comprehensive maintenance contract for eighteen solar PV Power Plants in ITI's (aggregate capacity 1247.52 KW. This would inter-alia include

2.1 A clear understanding of the features of the various ITI's and the proposed project site. This may require a prior visit to the proposed site.

2.2 Supply of the complete systems, including all necessary components, sub-components, spares, and tools etc. as per Technical Specifications given elsewhere in this document.

2.3 Erection and commissioning of the supplied systems on the specified site.

2.4 Construction of the control room and battery room as per **Annexure** near the building along with necessary partition with glass and aluminium frame structure works.

2.5 Providing pedestals it required for mounting of the PCU'S and control panels

2.6 Water pump with shed along with full C class piping (ISI specified) for water supply for panels cleaning and washing along with water discharge piping.

2.7 All structural drawings to be got approved from DTE.

2.8 Any other work urgently required as per site conditions.

2.9 The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.

2.10 Fabrications, supply and the installation of suitable support for the PV panels and other components whichever is required with the accessories.

2.11 Civil work (grouting) for PV structure.

2.12 SPV Power Plant shall be installed as per the specifications provided in the technical offer.

2.13 Provide sealed & tested energy meter at consumption side & generation side of SPV Power Plant.

2.14 Provide electrochemical marking (embossing) on each solar module frame which will show name of manufacturer, year of installation and capacity or solar module.

2.15 Transmission and Distribution line. It shall be the responsibility of the tenderer to provide distribution system.

2.16 Supply of manual for Operation and Maintenance of all the system in English.

2.17 Supply and installation of control equipments required for the system.

2.18 Training to the user for operation and maintenance of the system after 5 years of comprehensive maintenance period.

2.19 Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The times of minor nature, which are not mentioned, shall be incorporated by the tenderer.

2.20 Regarding cabling work (external & internal) & construction of control room, the tenderer is required to visit the site and as per actual site conditions quote (including drawing & design) accordingly.

2.21 Regarding actual work to be carried out at the site tenderer needs to execute the work in consultation with DTE.

2.22 The tenderer shall provide Comprehensive Maintenance Contract (CMC) of 5 years from date of commissioning. Thereafter, the installed & commissioned systems shall be handed over to DTE by the selected tenderer.

2.23 The tenderer shall provide the necessary training to identified representative approved by DTE during the course of 5 years of CMC for proper daily operation and maintenance of installed system after being taken over by the respective industrial Training Institutes.

2.24 The CMC period shall be 5 years from date of commissioning of system. The successful tenderer shall visit the installation quarterly and carry out regular servicing of installed systems and submit performance reports of installed system duly certified by concerned Principal/Superintendent of the concerned ITI to Director Technical Education J&K. Also, the tenderer shall submit performance reports (yearly) of installed system duly certified by Principal /Superintendent of concerned ITI to Director Technical Education J&K.

2.25 The grid supply connection would be provided with auto change over for topping up of the battery in case of low solar flux period.

2.26 The Battery-cum-Control Room shall be of appropriate size to accommodate the battery banks, electronic hardware and operator cabin. A consumer facilitation counter will be included in the control room for charging of mobile phones, battery operated two wheelers, and battery operated cars by the students, faculty and departments for popularising solar energy applications.

2.27 All cabling and load connections should be carried by the tenderer with proper synergy with the existing electrical systems of concerned ITI.

2.28 The tenderer shall install LED lights only wherever to be installed, for lighting of the project area/ cabins.

2.29 The tenderer will provide a minimum of 10 number of LED signages powered by solar.

3. INSTRUCTIONS TO BIDDERS

3.1 Estimated cost: Rs. 32.45 Cr.

3.2 Cost of each Tender from: Rs.50, 000/- (Rs. Fifty thousand only), by DD in favour of Accounts Officer, DTE payable at Srinagar/Jammu from a nationalized bank. Tender document will be available at the office of Accounts Officer, Directorate of Technical Education, J&K Bemina Bye Pass Srinagar. The tender document can be downloaded from DTE websites (www.jkdte.org) (www.jkdte.nic.in). In such case the tenderer shall enclose cost of tender by separate D.D. at the time of submission of tender document and same shall be enclosed in a separate envelop super- scribed "**Cost Of Bid Document**".

3.3 Validity period: The Tender shall remain valid for the period of one year from the date of submission of Tender document.

3.4 Tender without requisite amount of EMD shall be out rightly rejected. No tenderer is exempted from EMD. Correspondence on request from any tenderer on exemption of EMD will not be entertained by DTE.

3.5 Blank Tender and any other information will be available at the office of **Directorate of Technical Education, J&K** on all working days except Sunday and Public Holidays declared by the Government of J&K, during 10.00 am to 4.00 pm from **05-09-2012 to 25-09-2012**. Completely filled Tender forms will be received in sealed cover, addressed to the **Accounts Officer, DTE** in the office of **Accounts Officer DTE,** in person/ by courier/ post/ R.P.A.D. up to 12.00 noon on or before **01-10-2012.** DTE will not be responsible for any delay caused for submission by courier/ post. The tenders will be opened at 14.00 hrs in the office of Secretary to Govt. Technical Education & YSS department Civil, Sectt Srinagar on 03-10-2012, as far as possible.

3.6 Tenderer should submit the Tender document on or before the date and time specified in the Tender document. Tenders sent by post or by courier or R.P.A.D. or by other any means shall also reach within the stipulated time. DTE will not consider/ be responsible for any postal/ courier delay.

3.7 All the information furnished and document produced with the Tender shall be in English language only. The Tender notice and Tender document shall form a part of contract agreement.

3.8 Issue and / or submission of Tender document does not mean that tenderer is qualified for awarding the work.

3.9 The tenderer shall not remove any page, Annexure etc. from the original tender.

3.10 The tenderer shall sign and put firm's stamp on each page of the tender.

3.11 The original tender document shall be submitted with all Annexure as per procedure for submission of tender on due date and time.

3.12 The conditional tenders will be rejected out rightly.

3.13 Director Technical Education, J&K reserves the right to reject/ accept any or all Tenders without assigning any reason thereof.

3.14 Period of completion of work is six months from the date of issue of work order.

3.15 Bidders must submit their bids for all items as stated above.

3.16 Bids must be submitted in English language only.

3.17 Incomplete, telegraphic or conditional bids shall not be accepted.

3.18 Prices quoted must be firm and fixed. No price variation / escalation shall be allowed.

3.19 The bidders must sign at the bottom of each page of the bid documents at the time of submission in token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.

3.20 Valid TIN / VAT/ Sales tax /other clearance certificates duly attested must be submitted along with the bid.

3.21 Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under normal conditions.

3.22 Earnest money as specified in bid may be submitted in shape of Demand Draft drawn in favour of the **Accounts Officer, DTE** payable at Srinagar/Jammu from a nationalized bank. Bids without E.M.D will not be accepted.

3.23 Bids received late due to postal delay or otherwise will not be considered.

3.24 The bidders are required to furnish their offers in the price bid both in words & figures. In case of corrections ,if any, the original text/numerical must be clearly crossed out and re-written legibly above, below or on the side of the crossed out characters as per availability of space and the authorized person must put his dated initial under such corrections. In case of any conflict between figures and words, the latter shall prevail.

3.25 Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.

3.26 Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.

3.27 Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.

3.28 Copy of Test Reports from Solar Energy Centers (SEC)/Other Authorized Test Centres (OATC) approved by MNRE, GOI in regards to SPV Systems confirming to MNRE specifications or JNNSM norms and quoted standards under JNNSM.

3.29 Without prejudice to the obligation of the supplier under law any income tax, which DTE may bay be required to deduct by Law/Statute, shall be deducted at source and shall be paid to the income tax authorities on account of the supplier. DTE shall provide the supplier a certificate for such deduction of tax.

3.30 Power of attorney to sign the agreement on behalf of bidders, if any, should be enclosed along with original bid documents.

3.31 Notice inviting tender, bid documents, prescribed Technical bid, price bid, terms & conditions will form the part of the tender.

3.32 All pages of the bid documents must be signed & sealed by the authorized person on behalf of the bidders.

3.33 Bids will be accepted & will be opened as per information mentioned in the notice-inviting tender. No receipt against submission of bid shall be issued by DTE.

3.34 The last date of receipt of the bid is **01-10-2012** up to **16.00 hrs**. Sealed tenders may only be dropped in the specified tender box kept in the office of Accounts Officer DTE. Bids received after due date & time will not be considered.

The bids of such firms shall only be considered who have purchased the bid documents from the DTE by depositing the prescribed fee of the bid document (Non refundable) / downloaded from the website and submitted along with cost of the tender document. If due to any reason the due date is declared as a holiday the bid will be opened on next working day at the same time.

3.35 The technical bid shall be opened on **03-10-2012 at 14.00 hrs** in the office of Secretary to Govt. Technical Education & YSS department Civil Sectt, J&K Srinagar in presence of such bidders or their authorized representatives, who may like to be present at the time of opening.

3.36 The bid document should be submitted in two parts as detailed below:

3.36.1 Bids should be submitted in two separate sealed envelopes as mentioned below & addressed to the Accounts Officer, DTE J&K Bemina Bye Pass Srinagar in a separate sealed envelope superscribed "**Bid for Solar PV systems against Bid Call Notice No. TENDER DOCUMENT NO: DTE/Pur/401/12/552**. First sealed envelope should contain Technical Bid as per Annexure – 1, 2, and 3, prescribed test certificate, Earnest Money, Technical Specification, valid VAT/ Sales tax clearance certificate, Commercial terms & conditions, other bid documents duly signed & sealed, Indigenity Certificate, organizational profile, balance sheets and profit & loss accounts for last three years, certificate and proof as per qualification criteria as well as brochure, literature etc. It should be super-scribed with **ENVELOPE-1, TECHNICAL BID**. All the papers of bid documents except the price bid duly signed should be submitted in the first envelope. Required earnest money deposit in the form of Demand draft/FD in favour of Accounts Officer, DTE payable at Srinagar/Jammu should be attached. If the bid document has been downloaded from the website, the bank draft towards cost of bid document should be submitted in a separate envelop super-scribed "cost of bid document" and kept in the main envelop.

3.36.2 Second sealed envelope **(ENVEOPE-2)** should contain Price bid as per Annexure –5 in a separate sealed envelope. It should be super-scribed with "**ENVELOPE-2 PRICE BID**". Any condition in regard to financial aspects, payments, terms of rebate etc beyond the prescribed financial terms of DTE will make the bid invalid. Therefore it is in the interest of the bidders not to write anything extra in the Price Bid in Annexure-5 except price. The tenderes may enclose the detailed item-wise, work-wise break-up with the price bid. However, the bids will be evaluated on the basis of consolidated price bid as per ANNEXURE -5. Price bid should include all Taxes as may be applicable.

4. PROCEDURE FOR OPENING THE BIDS

The procedure of opening of the bid shall be as under

4.1 First envelope "**ENVELOPE-1 TECHNICAL BID**" shall be opened at the time & date mentioned in the bid notice by committee of officers of Directorate of Technical Education, J&K nominated by Secretary to Govt. Technical Education & YSS department in the presence of bidders, who choose to be present at the time of opening of bid.

4.2 Second envelope i.e. "**ENVELOPE-2 PRICE BID**" containing Price bid shall be opened after evaluation of technical suitability of the offer. The date for opening of second envelope (Price bid) shall be communicated subsequently. Second envelope

TENDER DOCUMENT FOR **INSTALLATION OF EIGHTEEN SOLAR POWER PLANTS IN ITIs (AGGREGATE CAPACITY 1247.52 KW**

Directorate of Technical Education, J&K

of only those bidders shall be opened who qualify in the technical bid. If necessary, the firms may be called for Technical Presentation of their product as per the time intimated by DTE.

4.3 In case of supply of any defective material or substandard material, the materials will be rejected & it will be the responsibility of the supplier for taking back & replacing the rejected materials at their own cost. In case of non-lifting of such rejected materials within a reasonable time offered by the office DTE will have the right to suitably dispose off the same and forfeit the amount.

4.4 The supplied materials should strictly comply with the specifications as mentioned in the bid; otherwise the material would be liable for rejection.

4.5 Any clarification on the technical specification and commercial terms and conditions may be clarified in writing from DTE.

4.6 Deviation of any commercial terms and condition and technical specification shall not be entertained under any circumstances.

4.7 Bidders may in their own interest visit the sites and undertake site visit before submitting bids. DTE will not be responsible for any incidental or consequential losses of the firms while execution and till expiry of the period of maintenance.

4.8 During the warranty period, MNRE/ State Agencies/ Users reserve the right to cross check the performance of the systems with the minimum performance levels specified in the MNRE specifications.

5. EVALUATION OF OFFER

5.1 The bid of any bidder who has not complied with one or more of the conditions will be summarily rejected.

5.2 Conditional bids will also be summarily rejected.

5.3 The tender will be evaluated by the expert technical committee. The authority for the acceptance of the tender rests with the DTE.

5.4 Financial bids of only the technically qualified bidders will be opened for evaluation in the presence of qualified bidders.

However, DTE shall not be bound to accept the lowest or any other tender or to assign any reason for non-acceptance or rejection of a tender. DTE reserves the right to accept any tender in respect of the whole or any portion of the work specified in the tender paper.

Director

Technical Education, J&K

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

Signature of Bidder with Seal

SIGNATURE AND STAMP OF THE TENDERER

6. GENERAL TERMS & CONDITIONS:

6.1 **Rate:**

The offer should indicate the unit cost of the system, Installation & Commissioning charges, O&M Charges and taxes & duties separately. The unit cost must be inclusive of packing, forwarding, loading & unloading charges, cost of insurance and transportation FOR destination where the system will be installed as per the work order.

6.2 **Sales Tax & Duties etc.:**

All Taxes and duties as prescribed both under Central and State Government sales tax rules would be applicable.

6.3 **Earnest Money Deposit**:

6.3.1 Earnest money deposit as specified in Tender Notice is required to be deposited along with the bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.

6.3.2 Earnest money can be deposited in shape of a Demand Draft/FDR/CDR in favour of Accounts Officer, DTE from a Nationalised Bank Payable at Srinagar/Jammu and the proof of deposits should be attached to the bid.

6.3.3 E.M.D would be refunded to the unsuccessful Bidders after finalization of the bid without any interest.

6.3.4 E. M. D would be adjusted against security deposit in case of successful bidders.

6.3.5 E. M. D would be forfeited in case of non- compliance of the purchase order by the successful bidder.

6.4. Security Deposit (SD)/ Performance Guarantee Fees:

6.4.1 The tenderer shall furnish Security deposit @10% of the total contract value within 10 days from the date of issue of work order by way of demand draft / bank guarantee valid for a period of five years from any nationalized bank in favour of **Accounts Officer, DTE**

6.4.2 Failure to comply with the terms of security deposit shall result into cancellation of work order without any further reference to the tenderer and the EMD shall be forfeited.

6.4.3 The security deposit shall be liable to be forfeited wholly or partly at the sole discretion of the DTE, if the tenderer either fails to execute the work of above projects or fails to fulfil the contractual obligations or fails to settle in full his dues to the DTE.

6.4.4 In case of premature termination of the contract, the SD will be forfeited and the DTE will be at liberty to recover the loss suffered by it & if additional cost is to be paid, the same shall be recovered from the tenderer.

6.4.5 The DTE is empowered to recover from the SD for any sum due and for any other sum that may be fixed by the DTE as being the amount or loss or losses or damages suffered by it due to delay in performance and / or non-performance and / or partial performance of any of the conditions of the contract and / or non-performance of guarantee obligations.

6.4.6 The security deposit shall be released to the tenderer only after contract is completed to the satisfaction of the DTE.

6.5 Programme Execution Schedule:

6.5.1	Delivery of systems at sites:	3 months from the date of handing over the site to the vendor for the purpose of erection of the solar PV power plant.
6.5.2	Installation & Commissioning:	3 months from the date of preliminary and performance guarantee inspection, physical verification and test handing over of systems for installation.

The above dates can be extended by another one month under exceptional circumstances solely at the discretion of Director Technical Education J&K.

6.5.3 Upon intimation about commissioning of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, DTE and other officers from the departments to be nominated by Secretary to Govt. TE.

6.5.4 The issuance of a JCC shall, in no way relieve the executing firm of it's responsibility for satisfactory operation of the power plant.

6.6 Validity of offer:

The offer shall be valid for a period of one year from the date of receiving of the bid. No escalation clause except the admissible tax component under the period of consideration would be accepted. The validity can be further extended with mutual consent as per merit of the case.

6.7 Warranty:

The complete system should be warranted against any manufacturing defect or bad workmanship at least for a period of 5 (five) years from the date of commissioning of the systems.

Major system subcomponent SPV modules must be warranted against any manufacturing defect of bad workmanship for a period of 20 years.

Warranty certificate to the above effect must be furnished along with the commissioning reports.

Any defect noticed during warranty period should be rectified/replaced by the supplier free of cost upon due intimation by DTE.

Bidder shall without prejudice to any other clauses of the order repair/replace the defective parts and restore the system to satisfactory working /performance within three days of intimation of fault without any additional cost to the department within the period of CMC.

CMC will be valid for five years from the date of satisfactory installation/commissioning/operation of the plants.

In case the supplier fails to rectify / replace the defective / damage equipment including transit damages, shortage within 7 days from the date of intimation of such shortage / damages, they shall have to pay penalty to the Department/ beneficiary as per details given in break down/corrective maintenance.

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 Bidder. Accordingly, this shall have two distinct components as described below.

This shall be done by the company at least once in every three months and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, topping up of batteries, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of battery terminals and any other activity that may be required for proper functioning of the SPV system as a whole.

Breakdown/Corrective Maintenance

Whenever a complaint is lodged by the user, the bidder shall attend to the same within a reasonable period of time (03 days) and in any case the breakdown shall be corrected within a period not exceeding seven days from the date of complaint. If more than 07 days are taken after registering of complaint, then Bidder has to pay Rs. 1000/- for each system for each day till the problem is rectified subject to a maximum of the cost of the System. This money shall be deposited to the account of Director Technical Education Department..

For carrying out the maintenance effectively, before placing the firm supply order, the Bidder shall have to establish at least one Office cum Service Centre in the name of the firm for each division of the state wherein 2-4 local employees are to be appointed by the firm depending upon the quantum of work order. These offices are to be run by the firms and not by the local dealers whose services could be used for district wise service centres. In case of Public sector undertakings necessary arrangements are to be put in place for providing proper service network.

The bidder shall maintain the following facilities at the local Service Centre for ensuring highest level of services to the end user:

i) Adequately trained manpower, specifically trained by the bidder for carrying out the service activities.

ii) Adequate provisions for record keeping, which shall inter-alia, include the

following :

Details of system supplied within the command area of the service station including full name and address of end user, system and sub-system serial numbers and records of routine maintenance carried out (duly signed by the end user). These records shall include voltage, current, specific gravity, indicator charge, CFL full glow, charge controller operation, electronics, etc.

b) History record sheets of maintenance done.

iii) Adequate spares for ensuring least down time of an individual system.

iv) The Service Centre shall send summary service reports to Technical Education Department on monthly basis. These reports shall include the following information :

(a) Number of systems covered by the Service Centre

(b) Number of systems working satisfactorily on the reporting date

(c) Number of complaints received during the period of reporting

(d) Number of complaints attended during the period of reporting

(e) Major cause of failure, as observed

(f) Major replacement made during the reporting period

(g)Reasons for cause of failure

Separate report shall be submitted for each type of systems manufacturer wise in case the service centre caters to the requirement of more than one manufacturer.

The records maintained at the Service Centre shall be available for scrutiny of authorized representatives of the Department or MNRE.

The date of maintenance period shall begin on the date of actual commissioning of the Solar Power Generators.

Bidder shall furnish details of infrastructure that are presently available for establishing of Service Centres.

TRAINING PROGRAME, AFTER SALES SERVICE AND AVAILABILITY OF SPARE PARTS

The responsibility of organizing training program will rest on the successful bidder. The training program will be organized in consultation with Director Technical Education Department /Consignee. The training program will focus on operation and maintenance of SPGs. Printed leaflet/literature should be made available English by the Bidder regarding the operation and maintenance of their SPGs.

The Bidder shall depute authorized Service Engineer within 7 days from the date of the intimation of fault, and establish sufficient inventory of spares in the District/State to provide satisfactory and uninterrupted services during the warranty period.

GUARANTEED GENERATION:

The tenderer shall give a guaranteed generation of minimum 3 units (kWh) per kW per day from SPV Power Plant during 300 sunny days in a year during comprehensive maintenance contract period. Otherwise, tenderer have to pay an amount of Rs.50/- per unit as compensation for the number of units not supplied against the guaranteed generation. The tenderer shall provide sealed & tested energy meter at consumption side of SPV Power Plant. Tenderer should quote the guaranteed generation in the offer. Daily reports of installed system duly certified by concerned authorised DTE officer/ Principal / Superintendent of the concerned ITI will be submitted by the tenderer to DTE.

6.8 Penalty and termination of contract:

The systems shall be supplied, installed and commissioned within the scheduled time. If the supplier fails to adhere to the schedule, DTE shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 1% of the delivery price of the delayed goods or unperformed services for each week of delay until actual delivery or installation/commissioning up to a maximum deduction of 10% of the contract price for delayed goods or installation and commissioning. Once the maximum is reached (i.e. 14 weeks of delay) DTE may consider termination of the contract and forfeit the security deposit without prejudice to the other remedies of the contract**.**

However, Competent Authority, DTE, may at his own discretion can consider allowing reasonable time extension upon written application of the supplying firm. If the delay is considered intentional or due to negligence of the vendor extension can be allowed with imposition of penalty. If the delay is considered to be genuine time extension can be allowed without imposition of penalty.

6.9 Force Majeure:

The supplier of the SPV system shall not be charged with liquidated damages nor shall his security for performance be forfeited when failure of the supplier in making delivery is due to any event beyond the control of the supplier and could not have been foreseen, prevented or avoided by a prudent person. These include, but are not restricted to acts of God, acts of public enemy, acts of Government, fires, floods, epidemics, strikes, freights, embargoes and unusually severe weather.

6.10 Inspection:

6.10.1 Pre delivery inspection of solar PV modules and other major components will be carried out by a team of designated officials of DGS&D or any other committee as may be considered appropriate at the factory site of the vendor.

6.10.2 DTE has the right to have the tests carried out at its own cost by an independent agency at any point of time.

Approval of material or workmanship or approval of part of the work during the progress of execution shall not bind the DTE or in any way affect him even to reject the work which is alleged to be completed and to suspend the issue of his certificate of completion until such alternation and modifications or reconstruction have been effected at your cost as shall enable him to certify that the work has been completed to his satisfaction.

6.11 Payment:

Subject to any deductions which J&K Technical Education Department may be authorized to make under the terms of the order, the payment shall be payable as given below:

a) **Payment to the extent of 60% shall be released on the supply of equipment at the site, subject to the condition that the material has been inspected by the third party preferably DGS&D and submission of Bank Guarantee of the value equivalent to 10% of the contract value as indicated in security deposit clause.**

b) Payment to the extent of 30% of the cost shall be released after the successful installation, testing & commissioning of the SPP and submission of documentary evidence that the taxes as applicable are got deducted by the firm, otherwise the same shall be

deducted by the Agency. This payment shall be released only after the firm opens its office in the regions of J&K where work is allotted and after obtaining satisfactory report from Director TTIC J&K/ other Govt authorized Agency who shall inspect the Solar Power Generator to verify the performance of the System. The charges to Director TTIC/ other Agency, if any, shall be paid by Technical Education Department.

c) The balance 10% shall be paid @2% annually of the 5 years of comprehensive maintenance *(warranty)* period after obtaining satisfactory performance certificate*(s)* of the installed Solar Power Plants Systems from the concerned Technical Officers of ITI's /designated authority*(ies),* nominated for the purpose by Secretary to Government Technical Education J&K.

Deduction:-

The TDS at the source will be deducted as per the Govt. rule and regulations. DTE will issue necessary certificates of TDS deduction

'C'/ 'D' form will not be issued by DTE.

6.12 Execution:

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

6.13 Limitation of Liability:

DTE, will, in no case be responsible for any accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of work. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations

6.14 Dispute:

For adjudication of any dispute between DTE and the bidders arising in this case should be resolved amicably by direct informal negotiations .However if the dispute could not be resolved amicably within 30 days of the commencement of such dispute/disagreement the matter will be refer to the arbitrator in accordance with the J&K state arbitration act and all disputes shall be subject to the jurisdiction of courts of J&K.

6.15 Risk Purchase Clause.

In case the successful tenderer fails to execute the project as mentioned above Director Technical Education reserves the right to procure the similar service from the alternative source at the risk, cost and responsibility of the successful tenderer.

6.16 Indemnity

Successful tenderer shall indemnity, protect and save Directorate of Technical Education all claims, losses , costs damages, expenses, action suits and other proceedings , resulting from infringement of any patent , trade mark copy right etc or such other statutory infringements in respect of all the equipment/ software supplied by him .

6.17 Clarification of offers

To assist in the scrutiny, evaluation and comparison of offers, the DTE may at his discretion, ask some or all tenderers for clarification of their offer. The request for such clarification and the response will necessarily be in writing. All prospective tenderers who have purchased the document shall be intimated of any amendment in writing by e-mail/post /uploading on the websites of DTE and they shall be binding on them.

Signature of Bidder with Seal

ANNEXURE – 1

DETAILS OF EARNEST MONEY DEPOSIT

(Separately typed preferable computerized and On Tenderer Letter head)

Ref. No. NO. _____ Date:

To,
The Director,
Technical Education, J&K
Bemina Bye Pass Srinagar.

Subject: Earnest Money Deposit (EMD) for the Tender No. NO. _____ dated

Respected Sir,

I/ We _____ (hereinafter referred to as the Tenderer) being desirous of Biding for the work under the above mentioned Tender document and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc., as mentioned in the Tender document.

I / We feel an immense pleasure to quote our most competitive rates herewith duly signed by me / us. I / We have quoted separately for the systems and the Earnest Money Deposit / s has been submitted separately in Envelop 1;

EMD details

Amount (Rs.) : _____

Instrument Number : _____

Date of issuance : _____

Name of the Bank : _____

Place: (Signature of Tenderer)

Name :_____

Designation : _____

Date: Seal :

19

TENDERER'S GENERAL INFORMATION

(To be typed separately & submitted in Envelope No.1)

To,
The Director,
Technical Education, J&K
Bemina Bye Pass Srinagar.

Subject: Tender No. _____ for

1. Name of Tenderer
2. Status of Firm
3. Number of Years in Operation _____
4. Registered Address _____
5. Operating Address _____
   (if different from above.) _____
   _____
6. Telephone Number _____
   [Area Code] [Number]
7. E-mail Address & Web Site _____
8. Tele-fax Number
   [Area Code] [Number]
   _____
9. PAN [Number]
   [Enclosed Copy of 'PAN CARD']
10. Service Tax Number _____
    [Enclosed copy of 'Service Tax Registration Certificate]
    _____

(Signature of Tenderer)

Date Name : _____

Designation : _____

Place : Seal :

DECLARATION **ANNEXURE – 2**

(To be submitted on Rs.100/- stamp paper)

I / We, hereby declare that I / We have made myself / ourselves thoroughly conversant with the sub – soil conditions, local conditions regarding all materials and Labour of which I / we have based my / our rates of this work. The specifications, conditions and lead of materials on this work have been carefully studied and understood by me / us before submitting this Tender. I / We undertake to use only the best materials defined / approved by the Ministry of New and Renewable Energy (MNRE) GoI.

The systems will be provided as per the specifications and guidelines issued by the Ministry of New and Renewable Energy / DTE. We are bound to adhere the guidelines issued by the Ministry of New and Renewable Energy / DTE from time to time. We also hereby committed that if in future MNRE make any changes in the specifications of the systems the same will be incorporated in the present Tender projects. We hereby agree that the work will be executed within the cost of Tender mentioned in the financial bid and there will be no escalation in cost for any reason thereof. We also agree that if we fail to complete the work and drop the work in middle, **Directorate of Technical Education, J&K** shall have right to recover the full amount from us. I / We shall accept any amendments made by DTE from time to time during total project completion period including 5 years Comprehensive maintenance contract (CMC).

I / We am/are also committed that we shall complete the work within stipulated time period specified in the work order for any work assigned by Order Issuing Organization. We will not ask for any further time extension.

I / We am / are bound to work as per Tender and work Order issued by DTE for this work with 5 years Comprehensive Maintenance Contract. In case of failure of the same, we shall be responsible for any loss and for the action taken by competent Authority of DTE resulting to ban to work and black-listing.

I / We shall comply with the provision of Contract Labour. (Regulation and Abolition) Act 1970, Minimum Wages Act 1948, Payment of Wages Act 1963, Workmen's Compensation Act 1961, the Contract Labour (Regulation and Abolition) Act, 1979 and all other related Acts and any modification thereof or any law relating thereto and rules made there under from time to time by the government of J&K. DTE shall not be responsible in this regard.

I / We shall be wholly responsible for any accident or any unusual/ unexpected circumstances held during the execution of work & also during the CMC period of 5 years.

(Signature of Tenderer)

Date Name : _____

Designation : _____

Place : Seal :

SIGNATURE AND STAMP OF THE TENDERER

ANNEXURE - 3

COMPANY PROFILE

(To be typed separately & submitted in Envelope No.1)

A} Information :	
Name of Company :	
Address of Head Office :	
Contact Person :	
Telephone :	
Telefax :	
E-Mail :	
No. of Branches (Dealers) and their address	
Address for Correspondence :	
Contact Person :	
Telephone :	
Telefax :	
E-mail :	
B} Business Organization : (Please tick wherever applicable & attach all supporting documents)	
Sole proprietorship	
Private Limited	
Public Sector Undertaking	
Limited Company	
Joint Venture	
Others (Please Specify Status)	
C} Business Management :	
Attach Corporate Organization Chart with Name	
D} Total Number of Employees Employed :	
1) At Head Office	
2) At Branch Office	
3) At Site	
E} Is Your Organization a Subsidiary of Another Company?	**Yes/ No**
If Yes, of whom?	
F} Financial Capability :	
Annual Turnover Last 3 Years: Attach Balance sheets of last 3 years. Rs. In Lakhs	
Projected this year	
Last year	
One year before last year	
Two year before last year	
Three year before last year	
Four year before last year	
Name and address of the bankers with Contact person and contact numbers.	
G} Whether your company hold following certificates:	**Yes/ No**
ISO 9001-2000	
ISO 14001-1996	

SIGNATURE AND STAMP OF THE TENDERER

OHSAS – 18001-1999	
If No, do you substantiate a need to have them	**Yes/ No**
H} Are there any Litigations/ Court cases against your company?	**Yes/ No**
If yes, give details :	
I} Any other information that you want to give (may attach separate pages)	

23
STAFF DETAILS

Name of the Organization :				
List of staff having relevant work experience				
Sr. No.	**Name**	**Qualification**	**Designation**	**Total Experience in years**

ANNEXURE - 4

WORK EXPERIENCE

Name of the Organization :								
List of works Completed in Last 3 Years								
Sr. No.	**Name of the Project**	**Name & Address of the Client**	**Contact Telephone Numbers of the Client**	**Major Items of Work***	**Value of Work in Rs.**	**Start Date**	**Due Date of Completion**	**Actual completion Date**

Note : 1. If Actual completion date is beyond the Schedule completion Date, please give reasons for the delay.
Note : 2. Attach relevant completion certificates document for works in previous 3 years.

Authorized Signatory
Company Seal

Date :

Place :

ANNEXURE –5

FINANCIAL BID

FOR

Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract for Eighteen Solar Photovoltaic Power Plant In Industrial Training Institutes of J&K (aggregate capacity of 1247.52 KW)

The cost of SPV power plant shall includes cost of distribution systems, cost of control room and wiring, switches, MCBs, fuse, etc. as per their respective technical specification. The cost details for Eighteen SPV power plants with aggregate capacity of 1247.52 KW should be submitted as follows:

Sr. No.	Name of work	Capacity	Cost of SPV Power Plant (Cost of Material + Cost of installation and commissioning, testing with 5 yrs. CMC + providing manpower for same + Cost of construction of Control room as per tender document including relevant man power.
1.	**Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract Of 80.04 KW Solar Photovoltaic Power Plant In one ITI (Directorate of Technical Education). AS PER TENDER DOCUMENT**	80.04 kw	
2.	**Cost of four units of 80.04KW Power Plants to be commissioned in four ITI's. AS PER TENDER DOCUMENT**	320.16kw	
3.	**Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract Of 66.24 KW Solar Photovoltaic Power Plant in one ITI (Directorate of Technical Education). AS PER TENDER DOCUMENT**	66.24 kw	
4.	**Cost of fourteen units of 66.24 KW Power Plants in 14 ITI's. AS PER TENDER DOCUMENT**	927.36kw	

Rupees (in words) ……..

SIGNATURE AND STAMP OF THE TENDERER

Cost is inclusive of all central/State taxes, insurance, octroi, transportation, loading-unloading, installation, commissioning and testing and CMC for 5 years and execution of civil works whatever required.

It is certified that the rates quoted above are as per the specifications terms and conditions mentioned in the bid document..

(Signature of Tenderer)

Date

Name : _____

Designation : _____

Place :

Seal :

7. TECHNICAL SPECIFICATION

The general scope under this contract includes to design, manufacture, testing ,inspection, packing and forwarding, transportation upto project site, loading & unloading, storage in safe custody, erection, carrying out preliminary tests at site, commissioning, performance testing, operation and maintenance for 5 years & handing over to the purchaser all the equipment installed for Eighteen Solar Photovoltaic Power Plant In Industrial Training Institutes of J&K (aggregate capacity of 1247.52 KW) at DTE, J&K**.**

The illustrative Schedule of requirements shall be in accordance with the specifications contained in this document.

7.1 System Details for one power generator for installation 80.04 KW SPP (4 units to be installed):

Sl. No.	Brief Description	Units	Make
1	SPV modules for a total capacity of 80.04KWp as per specifications.	1 Set	Compliant to bid document spec's
2	SPV module mounting structure suitable for accommodating 80.04 KW capacity SPV modules including foundation as per specifications on ground	1 Set	
3	PCUs as per specifications	1 No./ Set	PPS / OPS/ DB Electronics or any reputed brand.
4	Array Junction Boxes	1 Set	Tyco / Hensel/ spelberg
5	Main Junction Boxes	1 Set	Tyco / Hensel/ spelberg
6	Data Logging system with remote monitoring as per specification	1 Set	system as per specifications
7	DC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/L&T /Havells/HPL
8	AC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/L&T/ Havells/HPL
9	Cables requirement as per design	Mtrs. As required at site for full plant commissio ning	Finolex / Polycab / Havells / HPL of reputed make as per IS standards
10	Fire extinguisher in accordance with BIS codes for electrical short circuit fires along with sand buckets	1 Set	
11	Lightning arrester complete set as per specification	1 Set	

12	Earthing complete set as per specification	1 Set	
13	Battery Bank as per specifications	1 Set	120 Nos
14	Spares, tools and plant for 5 years operation and maintenance	As per list	
15	Fuses, Transfer switches, Printed Circuit boards required for power plant	1 Set	
16	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills	1 Item	
17	Operation and maintenance of the SPV Power Plant for a period of 5 years from date of commissioning of the power plant.	1 Item	
18	Engineering, electrical drawings and installations and O&M manuals	1 Set	
19	Any other equipment required to complete the installation		
20	Lighting arresters	1 Set	
21	CFL's 11 watt	Nos.	100
22	LED 7 watt	Nos.	100
23	Construction of 1 control room	As per annexure	

All the items against which no make has been mentioned must confirm to ISI standards.

1.2. BATTERY SIZING

- Autonomy required : 2-3 days
- Maximum DoD permissible : 0.80
- Battery capacity required : 2500 Amp-Hrs
- Discharge rate : 10 Hour rate

per cell voltage:2 volts, per cell : 2500 Amp-Hrs

AH (@C/10) at 27 ^{0}C :

Required No. of cells in series :

for achieving the required 120 System voltage

- Total No. of batteries & Capacity of battery bank. : 120 Nos of 2V

2. SOLAR PHOTOVOLTAIC: POWER GENERATORS **Supply, installation & commissioning, testing and (SPV) free maintenance** *(for five years)* **of SPV Power Generators of 66.24 kWp capacity at 14 ITI's).**

66.24 kW Solar Power Generators to be commissioned at 14 ITI's shall essentially constitute a system to provide daily 5 to 6 hours of illumination as backup power system besides it will be an alternative for runing various machinery equipments installed in ITI's for imparting the training in various trades besides provide lighting to illuminate the compound.. The aforesaid lighting and equipment load of approximately 66.24kW will have an interconnecting circuit, which will have the provision of being fed for resource charging through solar/battery bank/grid, with adequate switching over device(s), wiring, CFL/LED bulbs with holders etc where-ever required.

1 System Details for one power generator for installation 66.24 KW SPP(14 units to be installed):

Sl. No.	Brief Description	Units	Make
1	SPV modules for a total capacity of 66.24KW as per specifications.	1 Set	Compliant to bid document spec's
2	SPV module mounting structure suitable for accommodating 66.24 KW capacity SPV modules including foundation as per specifications on ground	1 Set	
3	PCUs as per specifications	1 No./ Set	PPS / OPS/ DB Electronics or any reputed brand.
4	Array Junction Boxes	1 Set	Tyco / Hensel/ spelberg
5	Main Junction Boxes	1 Set	Tyco / Hensel/ spelberg
6	Data Logging system with remote monitoring as per specification	1 Set	system as per specifications
7	DC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/L&T /Havells/HPL
8	AC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/L&T/ Havells/HPL
9	Cables requirement as per design	Mtrs. As required at site for full plant commissioning	Finolex / Polycab / Havells / HPL of reputed make as per IS standards
10	Fire extinguisher in accordance with BIS codes for electrical short circuit fires along with sand buckets	1 Set	
11	Lightning arrester complete set as per specification	1 Set	

12	Earthing complete set as per specification	1 Set	
13	Battery Bank as per specifications	1 Set	120 Nos
14	Spares, tools and plant for 5 years operation and maintenance	As per list	
15	Fuses, Transfer switches, Printed Circuit boards required for power plant	1 Set	
16	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills	1 Item	
17	Operation and maintenance of the SPV Power Plant for a period of 5 years from date of commissioning of the power plant.	1 Item	
18	Engineering, electrical drawings and installations and O&M manuals	1 Set	
19	Any other equipment required to complete the installation		
20	Lighting arresters	1 Set	
21	CFL's 11 watt	Nos.	80
22	LED 7 watt	Nos.	80
23	Construction of 1 control room	As per annexure	

BATTERY SIZING

- Autonomy required : 2-3 days
- Maximum DoD permissible : 0.80
- Battery capacity required : 2000 Amp-Hrs
- Discharge rate : 10 Hour rate

  per cell voltage:2 volts, per cell : 2000 Amp-Hrs

  AH (@C/10) at 27 ^{0}C :

  Required No. of cells in series :

  for achieving the required 120

  System voltage
- Total No. of batteries & Capacity of battery bank. : 120 Nos of 2V

31

DETAILS OF THE POWER GENERATORS

1) SPV modules shall be designed and manufactured to meet the same recognized standard which must have been used extensively throughout the world for more than a decade with an excellent track record of performance. SPV modules shall generate a peak power 125/150/200 Wp ± 0.5 Wp (as applicable) or should be of higher capacity with ± 0.5 Wp under STC. Each module should have two separate interconnected strings with proper by-pass diode(s). Minimum dimension of the SPV module shall be preferred.
The PV modules must qualify the relevant IEC 61215, IEC 61646, IEC62108 or IS 14286. (shall be supported with valid documents) Further, the manufacturer should certify that the supplied module is also manufactured using same material design and process similar to that of certified PV module.

PV modules used in solar Power Generators must be warranted for output wattage, which should not be less than 95% at the end of 10 years and 85% at the end of 25 years.

Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RFID used on each module. This can be partly inside and partly outside the lamination, but must be able to withstand harsh environmental conditions.)

(i) Name of the manufacturer of PV Module

(ii) Name of the Manufacturer of Solar cells

(iii) Month and year of the manufacture (separately for solar cells and module)

(iv) Country of origin (separately for solar cells and module)

(v) I-V curve for the module

(vi) Wattage, Im, Vm and FF for the module

(vii) Unique Serial No and Model No of the module *(to be allotted by JAKEDA and has to be inside of lamination))*

(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.

7.2 SOLAR PHOTOVOLTAIC MODULES

7.2.1 The total solar PV array capacity should not be less than 1247.52 KW and should comprise of solar crystalline modules of minimum 160 Wp and above wattage. Module capacity less than minimum 160 watts should not be supplied. The module type must be qualified as per IEC 61215 latest edition for crystalline silicon. SPV module conversion efficiency should be equal to or greater than 14.5% under STC. Modules must qualify to IEC 61730 Part I and II for safety qualification testing. Certificate for module qualification from IEC or equivalent to be submitted as part of the bid offer. Self undertaking from manufacturer / supplier that the modules being supplied are as per above.

7.2.2 The PV module shall perform satisfactorily in humidity up to 100% with temperature between – 40^{o}C to + 85^{o}C. Since the modules would be used in a high

voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect provided.

7.2.3 The predicted electrical degradation at the end of the period of 15 years shall be less than ten (10) per cent of the full rated original output.

7.2.4 Other general requirement for the PV modules and subsystems shall be the following

a. Raw materials(solar Cells) and technology employed in the module production processes shall have to be certified and a certificate giving details of major materials i.e. cells, Glass, back sheet, their makes and data sheets to be submitted for the modules being supplied by the bidder.

b. The rated output power of any supplied module shall have tolerance of +/- 3% as per MNRE standard specs.

c. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary more than 3 (three) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

d. Except where specified, the front module surface shall consist of impact resistant, low-iron and high-transmission toughened glass.

e. The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytically compatible with the structural material used for mounting the modules.

f. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP65 rated.

7.3 ARRAY STRUCTURE

7.3.1 Wherever required, suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design either I or L sections.

7.3.2 Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 70 microns on steel as per IS5905, if steel frame is used. Aluminium frame structures with adequate strength and in accordance with relevant BIS/ international standards can also be used.

7.3.3 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.

7.3.4 The structures shall be designed to allow easy replacement of any module & can be either designed to transfer point loads on the roof top or UDL as per site conditions.

7.3.5 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions.

7.3.6 Each panel frame structure be so fabricated as to be fixed on the ground. The structure should be capable of withstanding a wind load of 200 km/hr after grouting & installation. The front end of the solar array must be one meter above the Ground. Grouting material for SPV structure shall be as per M15 (1:2:4) concrete specification.

7.3.7 The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods.

7.3.8 The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;

a. Determination of true south at the site;
b. Array tilt angle to the horizontal, with permitted tolerance;
c. Details with drawings for fixing the modules;
d. Details with drawings of fixing the junction/terminal boxes;
e. Interconnection details inside the junction/terminal boxes;
f. Structure installation details and drawings;
g. Electrical grounding (earthing);
h. Inter-panel/Inter-row distances with allowed tolerances; and
i. Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop columns properly. All nuts and bolts shall be of very good quality stainless steel.

7.4 Power Conditioning Unit (PCU)

The PCUs required shall be of 100 KVA/75 KVA Hybrid for 80.04 KW and 66.24 KW respectively with provision for battery back-up, should convert DC power produced by SPV modules in to AC power and adjust the voltage & frequency levels to suit the local grid conditions. The 100 KVA hybrid PCU with battery back up shall feed power to the lighting / dedicated loads and supply excess solar power to local LT grid.

Common Technical Specification:

Control Type: : Voltage source , microprocessor assisted , output regulation

Out put voltage : 3 phase, 415 V ac (+12.5 %, - 20 % V ac)

Frequency : 50 Hz (+3 Hz, -3 Hz)

Continuous rating : 100 KVA Hybrid inverter

DC link voltage range : 0 to 600 V

Nominal Power : 100 kVA

Total Harmonic Distortion	: less than 3%
Operating temperature Range	: 0 to 55 deg C
Housing cabinet	: PCU to be housed in suitable switch cabinet, Within IP 20 degree of ingress protection
PCU efficiency	: 94 % and above at full load,
Power Control	: MPPT

Other important Features/Protections required in the PCU:

Mains (Grid) over-under voltage and frequency protection

Fool proof protection against Islanding.

Included authentic tracking of the solar array's maximum power operation voltage (MPPT).

Array ground fault detection.

LCD and piezoelectric keypad operator interface Menu driven

Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.

MOV type surge arresters on AC and DC terminals for over voltage protection from lightning-induced surges.

PCU should be rated to operate at 0 -55 deg. Centigrade unless provision for air conditioning is included in PCU

All parameters should be accessible through an industrial standard communication link.

Over load capacity (for 10 sec) should be 150% of continuous rating.

7.4.1 The PCU shall be self commuted and shall utilize a circuit topology and components suitable for meeting the specifications listed above at high conversion efficiency and with high reliability.

The Hybrid PCU shall be self commuted and shall utilize DSP technology to meet the specifications listed above at high conversion efficiency and with high reliability. The PCU shall be Hybrid One and shall give the preference to feed the Loads from Solar Energy being produced and shall draw the additional power from mains to meet the load requirements in the case load is more than solar energy being produced.

Conversely it should feed the solar power to the Grid if the load is less than the solar energy generated. It shall also draw the Power from Mains for charging of Battery Bank in case of Low Battery conditions. The PCU shall also have the ability for automatic starting, transfer and no-break transfer to an optional generator for extended grid failure periods.

7.4.2 Since the PCU is to be used in solar photo voltaic energy system, it should have high operational efficiency. The DC to AC conversion efficiency shall at least be 94 percent for output ranging from 20 percent of full load to full load.

The idling current -it no load must not exceed 2 percent of the full-load current.

7.4.3 In PCU there shall be a direct current isolation provided at the output by means of a suitable isolating transformer.

7.4.4 The PCU output shall be 415 VAC, 50 Hz 3 phase,

7.4.5 The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents.

7.4.6 The PCU shall be able to withstand an unbalanced output load to the extent of 30 %

7.4.7 The PCU shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.

7.4.8 The PCU shall go to the shut down/ standby mode with its contacts open under the following conditions before attempting and automatic restart after an appropriate time delay in insufficient solar power output.

a) Utility-Grid Over or Under Voltage
The PCU shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for a minimum of two minutes.

b) Utility-Grid Over or Under Frequency
The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes.

7.4.9 The PCU generated harmonics measures at the point of connection to the utility services when operating at the rated power shall not exceed a total harmonic current distortion of 4 percent, a single frequency current distortion of 4 percent and single frequency voltage distortion of 1 percent when the first through the fiftieth integer harmonics of 50 Hz are considered.

7.4.10 The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95 lagging below 25 percent of the rated output.

7.4.11 The high voltage and power circuits of the PCU shall be separated from the low-voltage and control circuits. The internal copper wiring of the PCU shall have flame resistant insulation. Use of PVC is not acceptable. All conductors shall be made of standard copper.

7.4.12 The PCU shall withstand a high voltage test of 2000 Vrms, between either the input or the output terminals and the cabinet (chassis).

7.4.13 Full protection against accidental open circuit and reverse polarity at the input shall be provided.

7.4.14 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

7.4.15 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.

7.4.16 Communication Modbus protocol with LAN/WAN options along with remote access facility and SCADA package with latest monitoring systems

7.4.17 Electrical safety, earthing and protection

a. Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

b. Galvanic Isolation: Galvanic Isolation is required to avoid any DC component being injected into the grid and the potential for AC components appearing at the array.

c. Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

d. Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

e. Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

f. Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the grid short circuit contribution.

7.4.18 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

7.4.19 The PCU shall include ground lugs for equipment and PV array grounding.

7.4.20 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years design life of the unit.

7.4.21 The PCU enclosure shall be weatherproof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The INVERTER shall be located indoor and should be either wall / pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.

7.4.22 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

7.4.23 All doors, covers, panels and cable exits shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm. (about 3x8 inch).

7.4.24 In the design and fabrication of the PCU the site temperature (5°to 55℃), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.

7.4.25 **Factory Testing:**

a. The PCU shall be tested to demonstrate operation of its control system and the ability to be automatically synchronized and connected in parallel with a utility service, prior to its shipment.

b. Operation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

c. Special attention shall be given to demonstration of utility service interface protection circuits and functions, including calibration and functional trip tests of faults and isolation protection equipment.

d. Operation of start up, disconnect and shutdown controls shall also be tested and demonstrate. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

e. Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25,50,75 and 100 percent of the rated nominal power.

f. A factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted.'

g. Factory testing of the PCU/ PCUs should be carried out and witnessed by the Purchaser's Engineers at the manufacturer’s premises.

7.4.26 PLANT METERING/DATA LOGGING

a) PV array energy production: Digital Meters to log the actual value of AC/DC Voltage, Current & Energy generated by the PV system shall have to be provided. Two way LT 415V energy meter (Import - Export metering) shall be incorporated in the system on the main LT AC Grid supply.

b) Solar Irradiance an integrating pyranometer (Class II or better) should be provided with the sensor mounted in the plane of the array. Readout should be integrated with data logging system.

c) Wind Speed : An integrated wind speed measurement unit be provided.

d) Temperature Sensor: Integrated temp, sensors for measuring the module surface temp., invertor inside enclosure temp, and ambient temp to be provided complete with readouts integrated with the data logging system.

e) A data logging system (Hardware and software) for plant control and monitoring shall be provided with the following features :

Two no's suitable Computers: 2.7 GHz Pentium with 80GB HDD, 1GB RAM, 2 Parallel & 2 Serial Port, Wi-Fi Lan Card, DVD RW Drive, 20" LCD, USB Scroll Mouse, along with 1 KVA ups .

f) GSM Modem / Wi Fi modem in case GSM connectivity is used or Wireless Router + modem in case Ethernet connection is being used for remote access must be provided.

g) Remote Supervisory Control and data acquisition through SCADA software at the purchasers location with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier.

All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values. The following parameters should be accessible via the operating interface display and also on the dedicated laptop in the office of the Directorate of Technical Education J&K through internet.

AC Voltage
AC Output current
Output Power
DC Input Voltage
DC Input Current
Time Active
Time disabled
Time Idle
Temperatures (C)
Invertor Status
Battery Status

Protective function limits (Viz – AC overload voltage, AC under voltage, over frequency. Under frequency, ground fault. PV starting voltage, PV stopping voltage, Over voltage delay, Under voltage delay, over frequency, Ground fault delay, PV starting delay, PV stopping delay).

7.4.27 PCU/ARRAY SIZE RATIO

The PCU continuous power rating shall be above 94% at full load.

7.4.28 PCU

Technical data sheet:-

The PCU shall continuously and control the utility interface within the stipulated range:-

On three Phases side:-

Output voltage	415(+12.5-20%) VAC
Frequency	50HZ(+3 HZ, -3 HZ)
Maximum current ripple	4% PP
Reactive Power	0.95 inductive to 0.95 capacitive

7.4.29 MAXIMUM POWER POINT TRACKER (MPPT)

Maximum power point tracker shall be integrated in the PCU to maximize energy drawn from the array. The MPPT should be micro processor based to minimize power losses. The details of working mechanism of MPPT shall be mentioned. The MPPT must have provision (.manual setting) for constant voltage operation.

7.4.30 DISCONNECTION AND ISLANDING

Disconnection of the PV generator in the event of loss of the main grid supply is to be achieved by in built protection within the power conditioner. This may be achieved through rate of change of current, phase angle, unbalanced voltage or reactive load variants.

Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are: Neutral voltage displacement Over current Earth fault And reverse power In case of the above, cases, tripping time should be less than (15 seconds. Response time in case of grid failure due to switch off or failure based shut down should be well within 5 seconds. In case of use of two PCUs capacity .suitable equipment for synchronising the AC outp ut of both the PCUs to the ACDB/Grid should be provided.

7.4.31 AUTOMATIC RECONNECTION AFTER THE GRID FAILURE IS RESTORED

PCU shall have the facility to reconnect the PCU automatically to the grid following restoration of grid subsequent to grid failure condition.

7.5 & 7.6 ARRAY JUNCTION BOX, MAIN JUNCTION BOXES:

The junction boxes are to be provided in the PV yard for termination of connecting cables. The J. Boxes shall be made of FRP/Powder Coated Aluminium with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The J.Bs shall be such that input & output termination can be made through suitable cable glands.

Made of FRP or cast aluminium/ copper

Copper bus bars/terminal blocks housed in the junction box with suitable termination threads

Conforming to IP65 standards and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single compression cable glands. Provision of earthing

Suitable capacity MOVs provided within the box to protect against lighting

7.7 Plant Control, data logger & plant monitoring unit

Basically, this unit should perform the following.

Measurement and/or recording of energy parameters.

Simple data logger or energy meter to record the energy data on a pre determined interval basis.

Measurement & continuous acquisition of ambient air temperature, wind speed, solar radiation, PV module temperature, PCU output voltage and current, output frequency

Operating state monitoring and failure indication.

Representation of monitored data in graphics mode or in tabulation mode.

Controlling & monitoring the entire power system through remote terminal.

Necessary hardwares & softwares shall have to be supplied by the contractor. Both the softwares and hardwares required for interfacing the plant with office including CPUs, modems UPS are to be supplied and installed by the contractor.

Remote control/ Instrumentation: The microprocessor control unit should have the provision for installation of RS – 232/485 communication link.

7.8 DC Distribution Board

DC Distribution panel to receive the DC output from the array field with analog measurement meter for voltage, current and power from different MJBs so as to check any failure in the array field.

DC DPBs shall have sheet from enclosure of dust & vermin proof. The bus bars are to made of copper of desired size. Suitable capacity MCBs be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

7.9 AC DISTRIBUTION PANEL BOARD

7.9.1 AC Distribution Panel Board (DPB) shall control the AC power from PCU, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar to be carried out and complete equipment along with metering to be installed in the ACDB. Requirement/specifications of DCDB and ACDB may be changed as per site conditions. An ACDB to be provided at the cable terminating point emanating from 100KVA PCU for interconnection control of dedicated electrical loads.

7.9.2 All switches at the, circuit breakers, connectors should confirm to IEC 60947, part I, II and III.

7.10 CABLES & WIRES

7.10.1 Cabling in the yard and control room: Cabling in the yard shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.

7.10.2 Wires: Only FRLS copper wires of appropriate size and of reputed make shall have to be used.

7.10.3 Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.

7.10.4 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified.

Any change in cabling schedule/sizes if desired by the bidder/supplier be got approved after citing appropriate reasons, All cable schedules/layout drawings have to be got approved from the purchaser prior to installation. All cable tests and measurement methods should confirm to IEC 60189.

7.10.5 Cable specifications:

Multi strand, annealed high conductivity copper conductor
PVC type 'A' pressure extruded insulation
Overall PVC insulation for UV protection and confirm to IEC 69947
Armoured cable for underground laying
All cables shall conform to BIS standards (IS 694) and (IS 1554)
The size of each type of cable selected shall be based on minimum voltage drop, however, the maximum drop shall be limited to 3%
Selected cable should carry a current density of minimum 1.2Amp/Sq.mm
All electrical cables / wires inside the building to be fixed in accordance with specifications for electrical works.
Proper laying of cables have to be ensured in appropriate cable trays, pipes / trenches as per site requirement.
A.C. supply cables to be terminated at the DB / LT bus bar.
For laying / termination of cables, latest BIS / IEC codes / standards be followed.

7.11 FIRE EXTINGUISHERS:

The fire fighting system for the proposed power plant for fire protection shall be consisting of:

Portable fire extinguishers in the control room for fire caused by electrical short circuits.

Sand buckets in the control room

The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing the batteries and PCUs as well as on the roof top where the PV arrays have been installed.

7.12 LIGHTNING PROTECTION:

There shall be the required number of suitable lightning arrestors installed in the array field. Lightning protection shall be provided by the use of metal oxide

resistors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act

7.13 EARTHING PROTECTION

Each array structure of the PV yard should be grounded properly. In addition the lighting arrester/masts should also be provided inside the array field. Provision should be kept be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act./IE Rules. Earth resistance should be tested in presence of the representative of DTE after earthing by calibrated earth tester. PCU ACDB & DCDB should be earthed properly.

7.14 Battery Bank:

The battery bank is to be designed to provide the backup power for feeding the dedicated loads in the event of failure of grid supply.

Storage Capacity: 220-240V, 2000Ah/2400Ah @ C/10

Type: VRLA batteries from reputed manufacturers.

The battery cells shall have high ampere hour efficiency so as to quickly pick up the charge of the order 95% High watt hour efficiency of at least 85%.

Hybrid AC source

In the event of low battery voltage the power shall drawn from AC Source automatically for topping-up of the battery.

Battery Bank-

The batteries shall be solar photo voltaic batteries of flooded electrolyte, low maintenance, lead Acid and made of hard rubber container.

Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications.

The batteries shall use 2V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V / cell.

Battery terminal shall be provided with covers.

Batteries shall be provided with micro porous vent plugs with floats.

Charging instructions shall be provided along with the batteries.

Suitable carrying handle shall be provided.

A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank. The features and dimensions of the battery rack shall be provided along with the bid document.

The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.

Bidder shall mention the design cycle life of batteries at 80%, 40% and 20% depth of discharge at 27 deg. C.

The batteries shall be designed for operating in ambient temperature of site in the state of J&K

The self discharge of batteries shall be less than 3 % per month at 20 deg. C and less than 6% per month at 30 deg. C

The charge efficiency shall be more than 90% up to 70% state of charge.

The topping up frequency shall be 12 – 18 months.

The batteries shall consist of individual cells, which can be carried separately with ease while transporting.

Offered batteries shall comply with the following:

10 % of DOD: 7200 cycles

50 % of DOD: 3000 cycles

80 % of DOD: 1200 cycles

The Battery Bank shall be designed to provide 3 days ("2 No Sun" days) autonomy. Bidder to provide battery sizing details along with their offer. The distance between two batteries may be kept 6 inches & vice versa.

AC Distribution Board (ACDB)

An ACDB shall be provided in between PCU and Load point.

It shall have a MCB of suitable rating for connection to load point

It shall have AC voltmeter and ammeter of suitable rating.

It shall have MCB's to supply power to control room loads such as exhaust fans, lighting loads and power plug sockets.

7.15 TOOLS & TACKLES AND SPARES:

After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the contractor for maintenance purpose. List of tools and tackles to be supplied by the contractor for approval of specifications and make from DTE.

A list of requisite spares in case of PCU comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MCCBs etc along with spare set of PV modules and batteries be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished.

7.16 DANGER BOARDS AND SIGNAGES

Danger boards should be provided as and where necessary as per IE Act./IE rules as amended up to date. Three signages shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block. Text of the signages may be finalised in consultation with DTE.

7.17 DRAWINGS & MANUALS

Two copies of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization and distribution for street lighting system along with protection equipment. Approved ISI and reputed makes for equipment be used.

For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to DTE before progressing with the installation work.

ANNEXURE-6

TECHNICAL BID

Design, Supply, Installation, Testing, Commissioning With Five Years Of Comprehensive Maintenance Contract for installation of 18 Solar Photovoltaic Power Plant In 18 ITI's in J&K State with aggregate capacity of 1247.52 KW

We conform the following technical specification.

Sl. No.	Item		Description
1	SPV modules for a total capacity of 1247.52KW as per specifications.		
	a	Capacity	
	b	Make	
	c	Module	
	d	No. of SPV Modules	
2	SPV module roof top mounting structure suitable for accommodating 1247.52 KW capacity SPV modules including foundation as per specifications on rooftop		
3	PCUs as per specifications		
4	Array Junction Boxes		
5	Main Junction Boxes		
6	Data Logging system with remote monitoring as per specification		
7	DC Distribution units as per specifications		
8	AC Distribution units as per specifications		
10	Fire extinguisher in accordance with BIS codes for electrical short circuit fires along with sand buckets		
11	Lightning arrester complete set as per specification		
12	Earthing complete set as per specification		
13	Battery Bank as per specifications		
14	Spares, tools and plant for 5 years operation and maintenance		
15	Fuses, Transfer switches, Printed Circuit boards required for power plant		
16	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills		

SIGNATURE AND STAMP OF THE TENDERER

17	Operation and maintenance of the SPV Power Plant for a period of 5 years from date of commissioning of the power plant.	
18	Engineering, electrical drawings and installations and O&M manuals	
19	Any other equipment required to complete the installation	
20	Solar Charge Controller	
21	Power Conditioning Unit (As per design specification given in tender which includes charge controller, inverter & Grid charger. The output power should be on 3 Phase)	
22	Battery Bank – VRLA Type 220-240V/ 2000Ah/2400Ah @ C/10	
23	Cabling with casing capping	
24	Transmission, Distribution & point writing	
25	Monitoring, Control & protection device	
26	Energy meter (tested by authorized Institute)	
27	Metering at generation site	
28	Metering at consumption site	
29	Control Room	
30	Spares	

Signature of the Bidder with seal

ANNEXURE-7

SITE VISIT REPORT LETTER

(To be submitted on letterhead of tenderer)

Date: ----------

To,

The Director,
Technical Education, J&K
Bemina Bye Pass Srinagar.

Sub. : Site Visit Report for DTE.

Ref. : **TENDER DOCUMENT NO.** _____

Sir,

This has reference to above referred tender for SPV Power Plant, I / We hereby declare that we have visited DTE site. I / We made ourselves acquainted with site conditions, approach to site, requirement of land, soil conditions, availability of water, requirement of tender conditions etc. I / We verified all details required to execute the projects. I / We have no problems in undertaking the projects and complete them in the given time period.

Thanking you

Yours faithfully,

(Signature of Tenderer)

Name of Tenderer ----------

Designation ----------

Seal:

Signature of DTE officer

Seal: .....

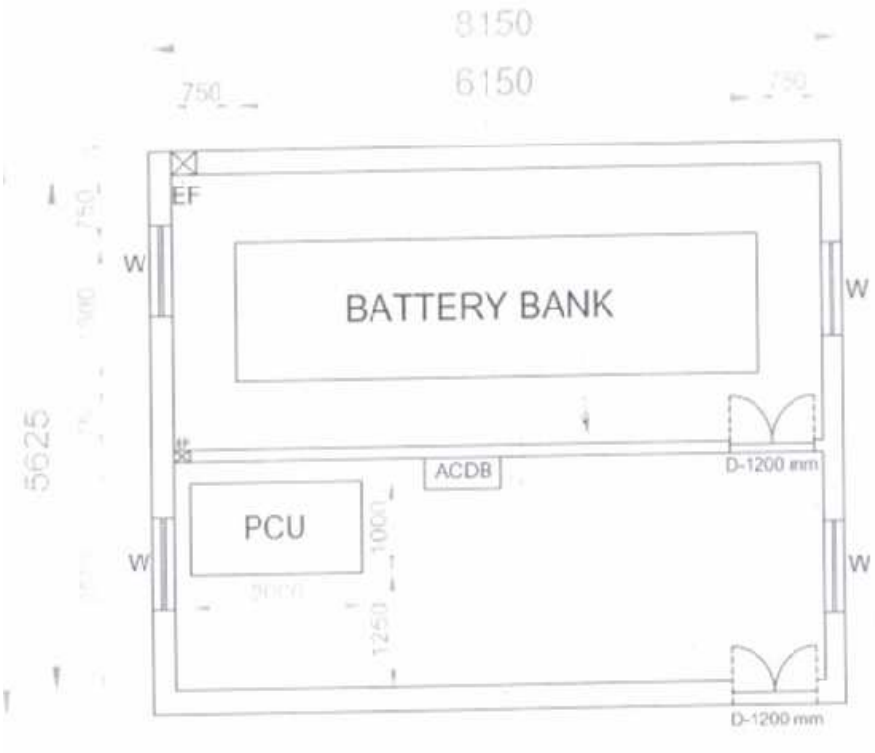
Date: .....

Annexure-8

Details of locations where Power Generators are to be set up

S.No	Name of the Industrial Training Institute (ITI)	Capacity of Solar Power Plant Required (kwp)
1.	Srinagar	80.04
2.	Anantnag	80.04
3.	Baramulla	80.04
4.	Sopore	66.24
5.	Budgam	66.24
6.	Kupwara	66.24
7.	Pulwama	66.24
8.	Ganderbal	66.24
9.	Kulgam	66.24
10.	Samba	66.24
11.	Kuthwa	66.24
12.	Poonch	66.24
13	Rajouri	66.24
14	Jammu	80.04
15	Kishtwar	66.24
16	Udhumpur	66.24
17	R.S.Pora	66.24
18	ITI Doda	66.24

Annexure-9



NOTE :-
BATTERY BANK : 6150x 1500 x 1205 (L x W
PCU :1900 x 2000 x 1000 mm (H x W x D A
ACDB : 900 x 350 x 1600 mm (L x W x H Ap
D - Door-1200 mm (min.)
W - Window (1000mm)
EF - Exhaust Fan (300 mm)
All Dimensions are in mm

CONTROL ROOM DIMENSION:-
8.1X6.1 = 50 SQ M (Apprx)

CHECK LIST

Documents to be submitted in Envelope No.- 1.

1 Tenderer's information as per format given in tender document at page no. _____
2 Original tender document duly signed and stamped on each page
3 Details of Earnest Money Deposit as format given in tender document at _____
4 Earnest Money Deposit (EMD) refers page 4.
5 Name of authorized person (power of attorney) for submitting the document.
6 Name of the Banker.
7 Undertaking on Rs. 100/- stamp paper refers
8 **Annexure-2**.
9 Copy of recently paid Income Tax Challan, PAN number, registration under VAT, service tax, professional tax etc. ref page no 5.
10 Information on Infrastructure for maintenance work
11 Information of the firm refers **Annexure-3** and Annexure 4.
12 P & L, Balance sheets or certificate from CA for indicating the turnover of minimum 50 crores during last 3 years.
13 IEC 61215 (revised) or equivalent certificate for SPV module certificate.
14 Copies of the satisfactory commissioning reports for SPV power plants of total minimum 50kW capacity duly signed by the user.
15 Detail drawings of mounting structure Solar PV power plant and other structures like control room etc.
16 Site visit reports duly certified by DTE refer **Annexure-7**.
17 All other documents as per the tender document.
18 Technical bid details as per Annexure 6.
19 NOC from JAKEDA regarding default in execution of earlier orders of similar nature. In case JAKEDA has placed a supplier order in favour of a tenderer for installation of SPP during last three years, the tenderer should attach a certificate from JAKEDA that work assigned was executed in stipulated time frame and is functional the executor has not defaulted in any manner.

If any of the documents is not submitted in envelope 1, the tender will be rejected.

Document to be submitted in ENVELOPE No -2

1 Financial bid/ offer in prescribed format for system / systems tendered refers Annexure-5
2 Detailed work-wise / item-wise break –up

Document to be submitted in ENVELOPE No:-3

Cost of tender document if tender document is downloaded from website.

Note:- Tenderer should submit the complete tender document and other required documents to be attached as per the list mentioned and in the order given as above.