



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

PHONE :2577419
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: cmuthuvel@bheltry.co.in
Web:

429-002/A

	Enquiry No	Enquiry Date	Due Date for Quotation
	2001400133 - 56	19.03.2014	14.04.2014
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	Design, manufacture and supply of Grid connected 5KW Solar PV power (on-Grid inverter)plant for submersible pump in Bore wells with collection tank. (The qualification criteria in Annexure-I and The Scope of work, supply of materials and technical specification in Annexure II are enclosed) (Submersible Pump under the scope of BHEL) Design, manufacture, supply	NO	2.000	2.00	25.06.14
20	Erection and Commissioning charge for the Grid connected 5KW Solar PV power (on-Grid inverter) plant for submersible pump in Bore wells. erection and commisioning	NO	2.000	2.00	25.06.14
30	3 x 1.5kwp Grid Connected Solar PV Power Generating System (Solar power Inverter) in Hospital. (The qualification criteria enclosed in ANNEXURE-I and The Technical Specification enclosed in ANNEXURE - II) Material to be delivered. SOLAR POWER INVERTOR	SET	1.000	1.00	25.06.14
40	Erection and Commissioning charge for the 3 x 1.5kwp Grid Connected Solar PV Power Generating System (Solar power Inverter) in Hospital. Erection and Commissioning	SET	1.000	1.00	25.06.14

General Note:

- 1) ENQ SL NO NO 10 & 20 AND 30 & 40 WILL BE EVALUATED SEPERATELY FOR ALL CIRCUMSTANCES.
- 2) SUPPLIER SHOULD BE CONFIRMED POINT BY POINT FOR ENQ SL NO 10 & 20 AND 30 & 40 FOR ANNEXURE I & II RESPECTIVELY.
- 3) SUPPLIER SHOULD ARRANGE AND SUBMIT THE OFFER IN THE FOLLOWING ORDER.

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

MUTHUVEL. C
Manager
Purchase / PSS
MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,
BHEL, Tiruchirappalli - 620 014



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<U><H>COVER-1</></>

- i) TECHNICAL INFORMATION AS PER ENQUIRY SL NO WITH DETAILS OF WHETHER QUOTED / NOT QUOTED AS PER ANNEXURE -A
- ii) COMMERCIAL TERMS AND CONDITION AS PER ANNEXURE-A
- iii) POINT BY POINT CONFIRMATION OF ANNEXURE I & II FOR ENQUIRY SL NO 10 & 20 AND 30 & 40 RESPECTIVELY.
- iv) DOCUMENTS WHEREVER IS REQUIRED AS PER ANNEXURE I & II.
- v) DOCUMENTS AS PER CLAUSE 28 OF TERMS AND CONDITIONS OF THE ENQUIRY (TWO PART BID) REF: BHEL / PSS / 190.

<U><H>COVER -2</></>

- i) EX WORKS BASIC PRICE OF THE QUOTED ITEMS WITH CLEAR TECHNICAL SPECIFICATION AS PER ENQUIRY SL NO.

Enclosures:

"LD clause has to be confirmed without fail."
"Payment to vendors will be made only thro E-Payment mode"

The offers should reach us 30 minutes before the time of opening of tenders.
The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

MUTHUVEL. C
Manager
Purchase / PSS
Matls Man: / Raw Materials
BHEL, Tiruchirappalli 620014.

MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

1. The tender will be operated on two part bid basis i.e. (I). *Techno-Commercial Bid* & (II). *Price Bid*.
2. **Techno-Commercial Bid:** Containing Technical details, specifications, commercial terms and conditions like percentage of P&F charges, Freight & Insurance, ED. WITH CESS, Taxes (BHEL will not provide "C" form for Non-Production Items), delivery terms, delivery schedule, validity of offer, payment terms (except price details), acceptance for LD clause, etc. as per ANNEXURE-A (submitted in your company letter head) shall be put in a cover (1) and super scribed as "Techno-Commercial Bid" for Enquiry No:Dt:Due Dt.:
3. **Price Bid:** Containing the price details shall be put in a separate cover (2) and superscripted as "Price Bid "for Enquiry No:Dt.:Due Dt.: as per ANNEXURE -B (submitted in your company letter head)
4. You are requested to put the above two envelopes (Techno-Commercial Bid & Price Bid) inside a separate larger sealed envelope and this envelope shall be super scribed as "Techno-Commercial Bid and Price Bid" for Enquiry No:Dt.:Due Dt.:

Your Quotations should be sent to:

The Manager,
Purchase Department / PSS,
MaterialsManagement / Raw Materials,
24 Building (4th Floor),
Bharat Heavy Electricals Limited,
Tiruchirappalli - 620 014.

5. Tender should not be addressed to any individual's name but only by designation.
 6. Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested; all amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.
 7. Please submit point wise compliance to our specifications, terms and conditions. Otherwise it will be presumed that you are accepting BHEL's terms and conditions.
 8. Offer/s received after *due date* and time: 02:00 pm will not be considered under any circumstances.
 9. **Validity of quoted rates should be maintained for 90 days from the date of Tender opening for ordering (Technical Bid). The quoted/Finalized rates shall be Firm till completion of the supplies.**
 10. The rates are to be quoted on F.O.R. destination basis (Inclusive of Packing, Forwarding, and Freight and Transit Insurance charges to supplier account). All the items should be supplied at our stores, BHEL / TRICHY-14 at your own cost. Offers with any other delivery conditions will be rejected.
- IMPORTANT NOTE: (I) Delivery condition like Ex-works / Ex-godown / Transportation of materials through transport carriers from your works up to the transport carrier's office at Tiruchy and taking delivery of goods by BHEL from such office of transport carriers is not acceptable to us)**
11. Unloading at BHEL Site has to be done by the suppliers and BHEL will not be in a position to provide any handling/ unloading facilities.
 12. **Payment Terms (Indigenous)**

Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.

Any deviation in the above payment term will attract loading as mentioned below.

"Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders

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13. Liquidated Damages / Penalty:-

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value).

14. If Guarantee / Warranty period is applicable as per tender specification, No deviation permitted and deviated offers are liable for rejection.

15. IMPORTANT NOTE: BHEL WILL CONSIDER THE RANKING AFTER THE LOADING IS APPLIED AS REFERRED ABOVE WHEREVER DEVIATIONS ARE OBSERVED.

16. No revision of prices will be entertained at any circumstances after tenders are opened.

17. If any sales tax is payable as extra to the quoted price it should be specifically stated in quotations along with CST & VAT Number failing which the purchaser will not be liable for payment of sales tax. Our TIN 33243560005 dt.01.01.2007 & CST no 239383 DT, 11.06.1991

18. On the due date of tender opening, only the technical bids will be opened. Technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. The price bids of techno-commercially suitable bidders will be opened at a later date with prior intimation to respective suitable bidders.

19. Ranking L-1, L-2 etc. shall be done generally on each individual items for the techno-commercially acceptable offers on landed cost to BHEL, Trichy basis and BHEL reserves the right to place order for individual items with different vendors. At special circumstance ranking shall be done on compatible basis which will be indicated through Enquiry special instruction General Notes.

20. BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion.

21. Lowest price received against BHEL tenders need not be the technically acceptable one and in that case BHEL reserves the right not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.


22. BHEL reserves the right to negotiate or refloat the tender opened, if L1 price is not the lowest acceptable price to BHEL due to inter-alia other reasons.

23. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.

24. RISK PURCHASE: Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the previous supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The new supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause.


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- 25. PREFERENTIAL DELIVERY:**(Applicable in the case of BHEL's Enquiry specifies Preferential Delivery in the Special Instructions) It should be noted if a contract is placed on a higher tendered as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O R destination, including all elements of freights, Sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract, such difference amount in addition to penalty at the rate mentioned in our LD clause.
- 26. CENVAT CREDIT:** If any Excise Duty is payable, the Chapter Head / Sub -head reference and the rate of the duty should be quoted. If the Tenderer is availing CENVAT credit for this input material, the effect of Performa credit should be passed on to the purchaser. Tenderer under "CENVAT" shall be preferred.
- 27.** Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted by purchaser in written will not be applicable to the contract.
- 28. VENDORS CURRENTLY NOT REGISTER WITH BHEL TRICHY & WISH TO PARTICIPATE TO IN THIS ENQUIRY SHOULD FURNISH THE FOLLOWING DOCUMENTRY PROOF / INFORMATION ALONG WITH OFFER, OTHERWISE YOUR OFFER WILL NOT BE CONSIDERED FOR EVALUATION.**
- a) Copy of Registration certificate
 - b) Banker's Information with copy of Bank Pass Book first Page.
 - c) Complete postal address with Pin Code.
 - d) Contact Person /s , Phone No, Mobile No, FAX No, Email ID etc.
 - e) Copy of statutory documents – VAT / TIN / EXICISE REGISTRATION / SERVICE TAX REGISTRATION / CST REGISTRATION etc
 - f) ISO certificate (if applicable)
 - g) Copy Purchase Order & Experience certification as proof of supply of similar item to any Govt. Agencies / PSU / Organizations.
 - h) Balance Sheet for last three financial years along with audit report is to be submitted.
 - i) Partnership Deed if applicable.
- 29** Special Provisions for Micro and Small Enterprises (MSME) bidders registered as per MSME act:
- i) 20% of the tendered quantity is earmarked for MSME suppliers in this tender.
 - ii) Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSME owned by SC/ST entrepreneurs.
 - iii) In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
 - iv) MSME suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Two years from the date of issue of acknowledgement in EM II)
 - v) Valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed as per Annexure I) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over.
 - vi) Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.
- 30.** For verification of data submitted towards evaluation of bidder's capability, BHEL may decide to visit the bidder(s) works. Any fact found deviating from submitted data shall make the bidder liable to be disqualified.
- 31.** In the event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors.
- 32.** The correspondence between the bidder and BHEL through email is considered as valid document Legally though not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties


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020 014-
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Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
..... is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as on
date..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost
excluding land and building and the items specified by the Ministry of Small Scale Industries vide its
notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and
furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED
Act, 2006:
Rs.....Lacs

The above investment of Rs.....Lacs is within permissible limit of
Rs.....Lacs forMicro / Small (Strike off which is not applicable)
Category under MSMED Act 2006.


Date:

(Signature)

Name -

Membership number -

Seal of Chartered Accountant


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Manager
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Matls Mgmt. / Raw Materials
ENTL. Tiruchirappalli 620 014.
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ANNEXURE -A

KINDLY SPECIFY ALL ENQ SL NOS AS PER BHEL ENQUIRY. (SUBMITTED IN COVER NO: 1)

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	WHETHER QUOTED/ NOT QUOTED
10			

COMMERCIAL TERMS CONFIRMATION REQUIRED FROM THE SUPPLIERS (SUBMITTED IN COVER NO: 1)


SL NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION
1	VALIDITY	90 Days from Date of tender opening	YES / NO
2	DELIVERY REQUIREMENTS	FOR-DESTINATION BHEL STORES TRICHY -620014	YES / NO
3	BASIC PRICE	SUPPLIER SHOULD MANDATORLY QUOTE THE BASIC PRICE ON EX-WORKS BASIS	YES / NO
4	PACKING & FORWARDING IF ANY IN % ON EX WORKS BASIC QUOTED RATE (Whether inclusive (or) extra)	SUPPLIER TO QUOTE	
5	EXCISE DUTY WITH CESS (Whether inclusive (or) extra) Clearly mention the percentage (or) amount	SUPPLIER TO QUOTE	
4	VAT / CST IN FULL % Clearly mention the percentage.	SUPPLIER TO QUOTE	
5	FREIGHT IN PERCENTAGE ON EX WORKS BASIC QUOTED RATE	SUPPLIER SHOULD MANDATORLY QUOTE PERCENTAGE OF FREIGHT IN % ON BASIC QUOTED RATE	
6	SERVICE TAX IF ANY FOR FREIGHT ELEMENT ONLY	SUPPLIER TO QUOTE	
7	Service Tax if any for Erection and commissioning	SUPPLIER TO QUOTE	
8	DEIVERY SCHEDULE	AS PER TENDER SCHEDULE	
9	PAYMENT TERMS	As per Clause 12 of Terms and Conditions of the Enquiry (Two Part Bid)	
10	LD CLAUSE	As per Clause 13 of Terms and Conditions of the Enquiry (Two Part Bid)	
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL :	
12	GUARANTEE / WARRANTY	REQUIRED/ NOT REQUIRED	
13	PERFORMANCE BANK GURANTEE	REQUIRED	

Muthuvel C
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 Manager
 Purchase / PSS
 Matls. Mgmt / Raw Materials
 BHEL, Tiruchirappalli, 620 013.


ANNEXURE -B

PRICE BID FORMAT OF ALL QUOTED ITEMS, IF ANY ITEM YOU ARE NOT QUOTED SIMPLY YOU SHOULD MENTION AS "NOT QUOTED" AGAINST THAT ENQ SL NO. (SUBMITTED IN SEPARATE COVER NO: 2)


ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	SUPPLIER SHOULD BE QUOTED EX-WORK BASIC PRICE ONLY IN RS (ALL OTHER TERMS ARE ALREADY QUOTED IN ANNEXURE -A)
10			


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ANNEXURE - I			
Design, manufacture, supply and commissioning of Grid connected 5KW Solar PV power (on-Grid inverter)plant for sumersible pump in Bore wells. (Without Pump)			
Qty- 2 nos.			
QUALIFICATION CRITERIA			
S.No	Description	Vendor to specify details & confirmation	Remarks
1.1	The bidder should be a approved by MNRE/ GOI, having a complete solar cell manufacturing and module manufacturing facility in India.(copy to be submitted)		
1.2	Bidder should submit a copy of ISO certification-9001 & 14001 for manufacturing facility from where the equipments will originate.		
1.3	Bidder should have commissioned minimum 3 nos of similar or higher capacity solar power system for bore wells in the past 5 years (enclose evidence).		
1.4	Bidder should have supplied, installed & supported not less than 10 units at various locations/offices (enclose evidence).		
1.5	The Bidder should be in core business of manufacturing solar pv pump systems for bore wells and should have made net profits in the past three years. Copy of Audited financial statements for last three years to be enclosed.		
2	Bidder should furnish reference list of customers, with full contact details to whom Solar power pump systems for bore wells have been supplied in the past. The vendor should also submit following details which are necessary for qualifying their offer.		
2.1	Name and postal address of the customer or company where similar or higher capacity solar power system installed.		
2.2	Name, designation, contact phone numbers and email address of the contact person of the customer.		
2.3	Details of solar power system supplied.Month and year of Supply & commissioning.		
2.4	Performance certificate from the customer for the satisfactory performance of the solar power pump system for bore wells supplied to them.		
2.5	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false / incorrect, the offer shall be rejected.		
3.1	The OEM should have technically qualified engineers who have expertise and certification to support the installations.		
3.2	Bidder should provide service after sales set up in Tamilnadu (by a qualified engineer). While a call centre is acceptable for logging support requirements however onsite support must be provided by a qualified engineer.		
3.3	Authorization certificate from the Principal Supplier should be submitted in case a Dealers/ Agents.		


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 Manager
 Purchase / PSS
 M/s. M/s. Ram Materials
 111, Anna Salai, Chennai - 600 014.


ANNEXURE - II			
Design, manufacture, supply and commissioning of Grid connected 5KW Solar PV power (on-Grid inverter)plant for sumersible pump in Bore wells. (Without Pump)			
Qty-2 nos.			
SCOPE OF WORK , SUPPLY OF MATERIALS & SPECIFICATION			
S.No	Description	Vendor to specify details & confirmation	Remarks
1	Scope of Work:		
1.1	Design, manufacture, supply & commissioning of Solar PV power pump for bore wells (Without pump)		
1.2	Detailed planning of smooth execution of the project		
1.3	Testing, Installation, Commissioning and prove out of the complete system.		
2	Scope of supply:		
2.1	24V 230Wp Crystalline Solar Modules with Silver Anodized Aluminum frame.		
2.2	M.S galvanized Module Mounting Structures to mount Solar modules		
2.3	Module Junction box IP 65 (weather resistant)		
2.4	Array Junction Box IP65 (weather resistant)		
2.5	120VDC input, 415V, 3-phase, 50Hz output Power Conditioning Unit		
2.6	Appropriate Cables and Hardwares		
2.7	AC Distribution board with metering system (ACDB) IP65 (weather resistant)		
2.8	import & Export metering facilities		
2.9	solar On -grid inverter with solar full protection, MPPT, High frequency inverter.		
2.9a	Around the solar plant & control suitable fencing and gate to be provided by the bidder.		
	Note: Submersible pump 5HP supply by BHEL		
3	Specification for Solar Modules:		
3.1	Individual Solar PV Module should be of capacity 230 Wp conforming to IEC 61215 (Edition 2 or latest), IEC 61730 , IEC 61710 for corrosive protection and manufactured in India in a plant certified under ISO 9001 : 2008 & ISO 14001 and shall have, ESTI, UL, TUV and CE approval. (enclose copies of certificates)		
3.2	SPV modules should be type tested by any one of the three accredited test laboratories under MNRE (attach copies)		
3.3	The Solar PV Module should be made from not more than 60 Nos. 156X156 mm single/poly crystalline Silicon Solar Cell connected in series.		
3.4	SPV module efficiency shall not be less than 13%.		
3.5	Module should be made up of high transmissivity glass front surface giving high encapsulation gain and hot butyl rubber edge sealant for module protection and mechanical support. Transmittivity of glass shall be not less than 91%.		
3.6	All materials used should have a proven history of reliable and stable operation in external outdoor applications.		


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S.No	Description	Vendor to specify details & confirmation	Remarks
3.7	The bird spike shall be provided to avoid bird sitting on the solar modules at the highest point of the array/module structure.		
3.8	Solar modules should be designed to operate and perform in relative humidity up to 100% with temperatures between - 10 Deg C and +85 Deg C and with stand draft up to 200km/hr from back side of the panel.		
3.9	The rated output of any supplied module shall not vary by more than 3-5% from the average power rating of all ratings. Each modules, therefore, has to be tested and rating displayed. (I-V characteristics curves).		
3.10	All the modules should be supplied with RFID as per MNRE.		
3.11	SPV module shall be highly reliable, light weight and shall have a service life of more than 20 years. SPV modules shall have a limited power loss of not more than 10% of nominal output at the end of 10 years and of not more than 20 % of nominal output at the end of 25 years.		
4	Specification for Module mounting stand:		
4.1	The Solar Module mounting structure should be made of hot dip galvanized MS angles & Pipes. All nuts & bolts shall be made of good quality stainless steel SS304. The minimum clearance of the lowest part of the module structure and the developed ground level should be 500 mm.or vendor to specify the height.		
4.2	The array structure shall be grounded properly using maintenance free earthing kit as per IS: 3043-1987, tested & certified by CPRI.		
4.3	The Solar Module mounting structure should withstand wind velocities up to 200 km/h.		
4.4	The supplier/manufacturer should specify installation details of the PV modules and the foundation details.		
4.5	Protection to the system should be provided by the strong enough fencing and gate.		
5	Specification for Power conditioning unit:		
5.1	Output Voltage: 415 volts three phase, 4 wire, Nominal voltage can be adjusted by $\pm 5\%$ via system set points.		
5.2	Output Frequency: 50Hz $\pm 0.5\%$; Inverter to follow grid frequency up to $\pm 3\text{Hz}$ of the nominal output frequency during normal operation.		
5.3	Power rating: ---kVA continuous rating		
5.4	DC Link Voltage rating: 0 to 250 volts DC		
5.5	Control Type: Bidder to specify		
5.6	Waveform: Sine wave		
5.7	Total harmonic Distortion (THD): less than 3 %		
5.8	Efficiency: more than 90 %		
5.9	Degree of protection: (IP-54 or Bidder to specify)		
5.10	Alarm signals: Bidder to specify		

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S.No	Description	Vendor to specify details & confirmation	Remarks
5.11	LCD front panel to display all electrical parameters kWhr, kW, Voltage, Power factor, frequency etc.		
5.12	PCU shall be capable to synchronize independently & automatically/to be phase locked with POWER SUPPLY AUTHORITY grid power line frequency to attain synchronization & export power generated by the solar panel to POWER SUPPLY AUTHORITY grid in addition to supply power to the loads.		
5.13	Should be equipped with all required controls and emergency stops. (Bidder should provide complete details of the system controls).		
5.14	Protections: a. Over voltage both at input & output; b. Over current both at input & output; c. Over/under grid frequency; d. Over temperature; e. Short circuit. f. Flot system should be provided to avoid over flow the storage tank(if any)		
6	Solar power plant should be provided with following	Features :	
6.1	Solar power plant with required cables , control panel and protection with rain preventive Box.		
6.2	Solar photovoltaic panel with manual tracking/ permanent fixing stand system including foundation work and fencing.		
6.3	Storage batteries will not constitute a part of this solar photovoltaic water pumping system.		
6.4	System should be provided with solar On -grid inverter with solar full protection, MPPT, High frequency inverter to match with the existing submersible pump.		
7	Approval of System Design:		
7.1	The concept plan/design of each subsystem shall be submitted to BHEL for approval .		
7.2	Quality Assurance Plan should include design control, process control, quality control, testing of sub-system, integration and bill of material intended to be used.		
8	Documentation:		
8.1	The following documents in English language should be supplied along with the system.		
8.2	Hard Copies - 3 Sets Vendor to confirm		
8.3	In CO form - 1 Set Vendor to confirm		
8.4	Operating manuals of System & PCU.		
8.5	Maintenance manuals with drawings of PCU, system assemblies / sub-assemblies with parts list.		
8.6	Trouble shooting chart for main and all sub systems		
8.7	Catalogues, O&M manuals for all bought out items used in the system.		
9	Pre-Dispatch Inspection:		
	Solar PV power pump for bore wells with all sub-systems and accessories shall be assembled and offered for inspection by BHEL Engineers at supplier's works. Supplier shall prove the performance of a sample module in their work during inspection.		


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S.No	Description	Vendor to specify details & confirmation	Remarks
10	Guarantee: Complete system would be under Gurantee for a period of ony year from the date of commissioning against any defects.		
11	Other features :		
11.1	The following minimum details must be provided in the manual: (a) About photovoltaic (b) About solar pump (c) About PV module (d) Clear instuction about mounting of PV module (e) About electronics used in AC motor pump sets, if any (f) DO sand Don't, (g) Clear instuction on regular maintenance and trouble shooting of the solar pumping system		
11.2	Name & address of the person or center to be contacted in case of failure or complaint.		
11.3	Components and parts used in the solar pumping system including the metallic structures should conform to the BIS specification, wherever such specification are availabe and applicable.		
11.4	The PV module (s) will be warrented for a minimum period of 10 years from the date of supply and the complete solar pumping system will be warranted for a minimum period of two years from the date of installation. The Warranty Card to be supplied by the manufactures with the system must contain the serial numbers of PV modules, electronics if any and the relevant dates about validity of warranty. The full name and address of contact person(s) for after sales service and warranty obligations must also be stated on the warranty card. A copy of warranty and will be provided to user. The manufactures can also provide additional information about the system and conditions of warrenty as necessary.		
11.5	To ensure compliance of MNRE specification, copies of data sheets of the PV modules, motor pump set, system design calculation, installation and O&M manuals and blank warranty cards, pass book for maintaining maintenance records etc. will be supplied by the manufactures to User. A copy of the drawing of the support structure will also be provided to User.		
12	Point by point confirmation is required from the supplier otherwise the offer will not be considered.		


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ANNEXURE - I

Design, manufacture, supply and commissioning of 3 x 1.5 kWp Grid connected Solar PV power generating system(solar power inverter) in hospital.


QUALIFICATION CRITERIA

S.No	Description	Vendor to confirm/Specify	Remarks
1.1	The bidder should be a approved by MNRE/ GOI, having a complete solar cell manufacturing and module manufacturing facility in India.(copy to be submitted)		
1.2	Bidder should submit a copy of ISO certification-9001 & 14001 for manufacturing facility from where the equipments will originate.		
1.3	Bidder should have commissioned minimum 3 nos of similar or higher capacity solar power system in the past 5 years (enclose evidence).		
1.4	Bidder should have supplied, installed & supported not less than 10 units at various locations/offices (enclose evidence).		

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S.No	Description	Vendor to confirm/Specify	Remarks
1.5	The Bidder should be in core business of manufacturing solar PV power generating systems and should have made net profits in the past three years. Copy of Audited financial statements for last three years to be enclosed.		
2	Bidder should furnish reference list of customers, with full contact details to whom Solar systems have been supplied in the past. The vendor should also submit following details which are necessary for qualifying their offer.		
2.1	Name and postal address of the customer or company where similar or higher capacity solar power system installed.		
2.2	Name, designation, contact phone numbers and email address of the contact person of the customer.		
2.3	Details of solar power system supplied. Month and year of Supply & commissioning.		
2.4	Performance certificate from the customer for the satisfactory performance of the solar power system supplied to them.		


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S.No	Description	Vendor to confirm/Specify	Remarks
2.5	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false / incorrect, the offer shall be rejected.		
3.1	The OEM should have technically qualified engineers who have expertise and certification to support the installations.		
3.2	Bidder should provide service after sales set up in Tamilnadu (by a qualified engineer). While a call centre is acceptable for logging support requirements however onsite support must be provided by a qualified engineer.		
3.3	Authorization certificate from the Principal Supplier should be submitted in case a Dealers/ Agents.		



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S.No	Description	Vendor to confirm/Specify	Remarks
3.4	Open Circuit Voltage : 37.08		
3.5	Short Circuit Voltage : 8.53		
3.6	Module Efficiency % : 15.53		
3.7	Cable Characteristics : 4 sq mm		
3.8	No of Bypass Diode : 3		
	MECHANICAL		
3.9	Module Dimension (L X W X H) (+/- 1.5mm) Apprx. : 1639 X 982 X 36		
3.10	Mounting Hole & Distance (mm), Grounding Hole (Dia in mm) Apprx. : 6.9 & 819, 5.1		
3.11	Weight (kgs) Apprx. : 17.25		
	PV CELL		
3.12	No of cells : 60		
3.13	Cell Matrix : 10X6		
3.14	Maximum Cell Size (mm)# : 156 X 156		
	OTHERS		
3.15	Junction Box Protection : IP 65 / IP 67		
3.16	Electrical Tolerance : 0 to +4.99 Wp		
3.17	Maximum System Voltage : 1000 V (TUV) & 600 V (UL)		
3.18	Temperature Coefficient of Isc : 0.04% / deg C		
3.19	Temperature Coefficient of Voc : - 0.32% / deg C		
3.20	Temperature Coefficient of P : -0.45% / deg C		
3.21	Impact Resistance : Hail: 25mm at 23 m/s		
3.22	Temperature Tolerance : -40 to +85 deg C		


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S.No	Description	Vendor to confirm/Specify	Remarks
3.23	Standard Testing Conditions : Irradiance : 1000 W/sq.m Module Temp : 25 deg C AM : 1.5		
3.24	Individual Solar PV Module should be of capacity 230 Wp conforming to IEC 61215 (Edition 2 or latest), IEC 61730 , IEC 61710 for corrosive protection and manufactured in India in a plant certified under ISO 9001 : 2008 & ISO 14001 and shall have, ESTI, UL, TUV and CE approval. (enclose copies of certificates)		
3.25	SPV modules should be type tested by any one of the three accredited test laboratories under MNRE (attach copies)		
3.26	The Solar PV Module should be made from not more than 60 Nos. 156X156 mm single/poly crystalline Silicon Solar Cell connected in series.		
3.27	SPV module efficiency shall not be less than 13%.		
3.28	Module should be made up of high transmissivity glass front surface giving high encapsulation gain and hot butyl rubber edge sealant for module protection and mechanical support. Transmittivity of glass shall be not less than 91%.		
3.29	All materials used should have a proven history of reliable and stable operation in external outdoor applications.		
3.30	The bird spike shall be provided to avoid bird sitting on the solar modules at the highest point of the array/module structure.		


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S.No	Description	Vendor to confirm/Specify	Remarks
3.31	Solar modules should be designed to operate and perform in relative humidity up to 100% with temperatures between -10 Deg C and +85 Deg C and with stand draft up to 200km/hr from back side of the panel.		
3.32	The rated output of any supplied module shall not vary by more than 3-5% from the average power rating of all ratings. Each modules, therefore, has to be tested and rating displayed. (I-V characteristics curves).		
3.33	All the modules should be supplied with RFID as per MNRE.		
3.34	SPV module shall be highly reliable, light weight and shall have a service life of more than 20 years. SPV modules shall have a limited power loss of not more than 10% of nominal output at the end of 10 years and of not more than 20 % of nominal output at the end of 25 years.		
4	Specification of Solar Grid Tie String Inverter		
4.1	Input (DC)		
4.2	Max. DC power : 1800W		
4.3	Max. DC voltage : 500V		
4.4	MPPT voltage range : 150V-450V		
4.5	Nominal DC voltage : 360V		
4.6	Min. / start DC voltage : 120V / 150V		
4.7	Number of MPPT/s : 1		
4.8	Strings per MPPT : 1		
4.9	Max. DC power per MPPT : 1800W		


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S.No	Description	Vendor to confirm/Specify	Remarks
4.10	Max. input current per iVPPPT : 9A		
4.11	Output (AC)		
4.12	Nominal AC output Power : 1500W		
4.13	Nominal AC voltage : 230 V		
4.14	AC voltage range : 190 V – 260 V		
4.15	Nominal AC grid frequency : 50 Hz		
4.16	AC grid frequency range : ± 5 Hz		
4.17	Max. output current : 9A		
4.18	THD : <3%		
4.19	AC connection : Single phase		
4.20	Topology : Transformer less		
	Efficiency		
4.22	Efficiency : 96.0%		
4.23	Consumption: standby / night : <5W / < 0.2 W		
	Mechanism Data		
4.24	Dimensions (W / L / D) in mm : 353/605/182		
4.25	Weight : 12KG Appr.		
	Environment Data		
4.26	Operating temperature range : -10 °C ... +55°C		
4.27	Noise Level : ≤ 35 dB		
4.28	Cooling : Natural air cooled		
4.29	Installation: Indoors / Outdoors : yes / yes		
4.30	Protection rating : IP65		
	Features		
4.31	LCD display : yes		


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S.No	Description	Vendor to confirm/Specify	Remarks
6.10	Alarm signals : Bidder to specify		
6.11	LCD front panel to display all electrical parameters kWhr, kW, Voltage, Power factor, frequency etc.		
6.12	PCU shall be capable to synchronize independently & automatically/to be phase locked with POWER SUPPLY AUTHORITY grid power line frequency to attain synchronization & export power generated by the solar panel to POWER SUPPLY AUTHORITY grid in addition to supply power to the loads.		
6.13	Should be equipped with all required controls and emergency stops. (Bidder should provide complete details of the system controls).		
6.14	Protections: a. Over voltage both at input & output; b. Over current both at input & output; c. Over/under grid frequency; d. Over temperature; e. Short circuit.		
7	Approval of System Design:		
7.1	The concept plan/design of each subsystem shall be submitted to BHEL for approval.		
7.2	Quality Assurance Plan should include design control, process control, quality control, testing of sub-system, integration and bill of material intended to be used.		
8	Documentation:		
8.1	The following documents in English language should be supplied along with the system.		
8.2	Hard Copies - 3 Sets Vendor to confirm		
8.3	In CD form - 1 Set Vendor to confirm		
8.4	Operating manuals of System & PCU.		


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S.No	Description	Vendor to confirm/Specify	Remarks
8.5	Maintenance manuals with drawings of PCU, system assemblies / sub-assemblies with parts list.		
8.6	Trouble shooting chart for main and all sub systems		
8.7	Catalogues, O&M manuals for all bought out items used in the system.		
9	Pre-Dispatch Inspection: Solar PV panel power generating system with all sub-systems and accessories shall be assembled and offered for inspection by BHEL Engineers at supplier's works. Supplier shall prove the performance of a sample module in their work during inspection.		
10	Guarantee: Complete system would be under Guarantee for a period of one year from the date of commissioning against any defects.		


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