



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)
Bharat Heavy Electricals Limited
(A Government of India Undertaking)
सोलर बिजनेस डिवीजन
सोलर बिजनेस डिवीजन,
SOLAR BUSINESS DIVISION

फोन/Phone : +91 80 2218 ----
ई-मेल/E-mail : -----
पी.बी.नं 1249, प्रो सी एन आर राव सर्कल
आईआईएससी पोस्ट मल्लेश्वरम
बेंगलुरु - 560 012
P.B. No.1249, Prof. C N R Rao Circle
II Sc Post Malleswaram
Bengaluru -560 012

Ref.No:BHEL:SBD:SPV:MOU:PVMODULES:REV 00

Dated: 29.10.2021

Dear Madam/Sir,

Subject:**Invitation to Enter into Memorandum of Understanding (MOU) for Freezing Techno Commercial Terms & Conditions w.r.t the Specification/s, Drawings & Quality Plan for procurement of Solar PV Modules.**

Bharat Heavy Electricals Limited (BHEL) is the largest engineering and manufacturing Public Sector enterprise in India of its kind in the business of providing equipment, systems and services for energy related infrastructure. BHEL caters to sectors like Power Generation and transmission, Industry, Traction electrics & controls, Renewable Energy etc. Established in late 50's, BHEL has installed thermal power plant of over 170 GW globally. The annual turnover of BHEL stands over US\$ 2.4 Billion for the current year. BHEL has a staff strength of 37,000 and has 17 manufacturing units across India.

Solar Business Division (SBD) of BHEL, situated in Bangalore, houses SPV module manufacturing capacity of 2x100MW as part of BHEL's clean energy initiative. SBD is currently supplying Solar Power Plants to State & Central Govt. Organizations & other private companies in India. We are ISO 9001, OHSAS 18001 & ISO 50001 company and provide (also expect) best quality in material, workmanship and processes.

With the portfolio of 1300 MW projects commissioned under its fold BHEL has plans to foray into floating as well as ground mounted solar power plant business in CPSU/ Govt Utility segment. Under the present business scenario and unprecedented demand for capacity addition under this segment, we have decided to upgrade our procedures and system related to the procurement of various raw material to enable our vendors for speedy response against our enquiries & REDUCING THE TIME FOR CONVERSION OF ENQUIRY to PO. It has become necessary to cope up with the demand in the market to reduce our cost & procurement cycle by having a prior understanding (including pre-bid tie-ups) with prospective suppliers on our procedures, systems, technical specifications and commercial conditions.

For this purpose, we wish to follow the following procedure:

1. Our Technical specifications, Quality requirements and Commercial terms & conditions is issued with this letter for acceptance and freezing with reputed organizations.
2. Any comments / deviation to this conditions shall be mentioned in Annexure -II to this letter with all details required therein including % cost of withdrawal of deviation. Only in case, any deviations remains unacceptable even after due clarification / discussions etc., the % cost of withdrawal of the same shall be carried over to the MOU for the purpose of finalizing the prices during tendering.
3. Enquiries shall only be addressed to parties with whom MOU has been entered (although bound by the circular issued by Govt of India time to time). No Specification / Quality requirement / Commercial terms and condition will be issued along with enquiry (NIT) and only the concerned parameters like quantity, delivery etc. will be provided in the enquiry for the bidders to quote their prices. However, where there is a change in specification, the same will



पंजीकृत कार्यालय 'बीएचईएल हाउस' सिरी फोर्ट, नई दिल्ली - 110 049
वेबसाइट: www.bhel.com कॉर्पोरेट पहचान संख्या: L74899DL1964GOI004281
Regd. Office: 'BHEL House' Siri Fort, New Delhi - 110 049
Website: www.bhel.com Corporate Identity Number: L74899DL1964GOI004281





भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 (भारत सरकार का उपक्रम)
 Bharat Heavy Electricals Limited
 (A Government of India Undertaking)
 सौरलार्क बिसिनेस डिविजन
 सोलर बिजनेस डिविजन,
 SOLAR BUSINESS DIVISION

ई-मेल/E-mail : -----
 पी.बी.नं 1249, प्रो सी एन आर राव सर्कल
 आईआईएससी पोस्ट मल्लेश्वरम
 बेंगलुरु - 560 012
 P.B. No.1249, Prof. C N R Rao Circle
 IISc Post Malleswaram
 Bengaluru -560 012

be communicated with enquiry along with project specific technical and commercial requirement, if any. Bidders need to go through the additional requirement project specific while quoting against our enquiry.

4. While submitting your quotation, you will be required to attach a letter (Annexure-1) confirming that the supply will be as per agreed Commercial, Technical specification and conditions (SCC & GCC) with BHEL, mentioning the reference of the MOU (Memorandum of Understanding) as applicable after due clarification / discussions.

With the aforesaid in mind, BHEL invites expression of interest from the reputed Global manufacturers (OEMs) of Solar PV Modules (refer Pre-qualifying & other requirements) to enter into a Memorandum of Understanding (MOU) for sourcing of the plant requirement as per below mentioned technical specification, commercial T&C & other documents which are also hosted at our websites www.bhel.com & CPP portal.

Sl. No	Description	References
1	Technical Specification #	DOC NO: SPV-4-02-00024 Rev 00 DOC NO: SPV-4-02-00025 Rev 00 DOC NO: SPV-4-02-00026 Rev 00
2	General Conditions of Contract (GCC)	GCC R0
3	Special Conditions of Contract (SCC)	SCC R0

Your offer for entering into MOU, in line with our terms and conditions, should either be delivered in person or sent by COURIER/REGISTERED POST, to the following address only:

BHEL- SBD Tender box (Reception of SBD)

C/o. AGM / MM
 M/s BHARAT HEAVY ELECTRICALS LTD., SOLAR BUSINESS DIVISION,
 Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012
 E-MAIL: spankaj@bhel.in; aknived@bhel.in
 Ph. No. +91-080-2218-2269, +91-080-2218-2149.

Ref. No: **SBD: TC- MOU- SPK-SPV Modules-001** & due date to be mentioned in subject of mail.

Bidders may adopt this mode at their own risk. The Purchaser does not own any responsibility /liability for delays in receipt / loss of secrecy of such offers. Such offers shall be received well in advance to enable them to be dropped in the tender box in time

It shall be the responsibility of the bidder to ensure that the tender is delivered on or before the due date by **02:00 P.M. The offer has to be deposited in tender box only.** It shall be opened at **02:30 P.M** on the due date in the presence of authorized representatives of the bidders, who may like to be present.

Offer can also be submitted thru email to technicalbid-epd@bhel.in only.

NOTE:-

The bidder is required to clearly mention



पंजीकृत कार्यालय 'बीएचईएल हाउस' सिरी फोर्ट, नई दिल्ली - 110 049
 वेबसाइट: www.bhel.com कॉर्पोरेट पहचान संख्या: L74899DL1964GOI004281
 Regd. Office: 'BHEL House' Siri Fort, New Delhi - 110 049
 Website: www.bhel.com Corporate Identity Number: L74899DL1964GOI004281





भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 (भारत सरकार का उपक्रम)
 Bharat Heavy Electricals Limited
 (A Government of India Undertaking)
 सौराष्ट्र बिसिनेस डिविजन
 सोलर बिजनेस डिविजन,
 SOLAR BUSINESS DIVISION

ई-मेल/E-mail : -----
 पी.बी.नं 1249, प्रो सी एन आर राव सर्कल
 आईआईएससी पोस्ट मल्लेश्वरम
 बेंगलुरु - 560 012
 P.B. No.1249, Prof. C N R Rao Circle
 IISc Post Malleswaram
 Bengaluru -560 012

1. Tender Ref., RFQ/Tender Due Date & Name of the item in BOLD LETTERS on the top of each envelope submitted.
2. Name and contact details (including mobile no. and email address) of minimum one contact person along with date of submission of offer in a cover letter.

ENQUIRY TERMS AND CONDITIONS

1. No price bid shall be submitted along with the offer.
2. Bidders shall submit their offers meeting the requirements of the following tender documents (enclosed) included in this Enquiry Letter :
 - a. General Conditions of Contract (GCC) Rev R0 comprising of: Instructions to Bidders and General Commercial Terms & Conditions.
 - b. Technical Specification, Price format & Special Conditions of Contract (SCC),
3. Tenders shall be submitted strictly in accordance with the requirements of the above tender documents.
4. In case of deviations (Technical/ Commercial), the same shall be highlighted separately giving clause references along with the **Cost of withdrawal of Deviations as per Annexure-II of GCC Rev. 00 of "DEVIATION SHEET (COST OF WITHDRAWAL)"** along with reasons for taking such deviations.
5. Cost of withdrawal for the deviations, for which, the "Cost of withdrawal" is not specified, shall be taken as NIL.
6. ***Bidder to note all the points mentioned in "Notes" of Annexure-II to GCC Rev.R0.***
 - a. All the above Tender Documents shall automatically become a part of the Order / Contract after its finalization.
 - b. Bidder has to submit "NO DEVIATION CERTIFICATE FOR COMMERCIAL TERMS AND CONDITIONS as per General Conditions of Contracts (GCC, Rev.R0), Special Conditions of Contracts and Notice Inviting Tender (NIT)" **in case of no deviations.**
 - c. Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any/all tender(s) in part or full without assigning any reason whatsoever.
 - d. Late tenders are liable to be rejected.
 - e. All correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address:

<u>Commercial</u>	<u>Technical</u>
S.Pankaj Kumar/ Dy.Manager MM BHEL-SBD, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012 E-MAIL: Ph. No. +91-080-2218 2269 (8126333426)	Muhammed Shakir/Dy.Manager Engg BHEL-SBD, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 12 E-MAIL: Ph. No. +91-080-2218 2357(9620879978)

The bidders shall submit all their queries/clarifications one week prior to tender opening after which it will be presumed that there are no queries/clarifications and BHEL will be under no obligation to reply queries/clarifications raised after the date.

5. Pre - Qualifying Requirements:

Bidders are requested to furnish the details as per "TECHNICAL PRE-QUALIFYING REQUIREMENTS" (attached with the enquiry document) and to submit the credentials.



पंजीकृत कार्यालय 'बीएचईएल हाउस' सिरी फोर्ट, नई दिल्ली - 110 049
 वेबसाइट: www.bhel.com कॉर्पोरेट पहचान संख्या: L74899DL1964GOI004281
 Regd. Office: 'BHEL House' Siri Fort, New Delhi - 110 049
 Website: www.bhel.com Corporate Identity Number: L74899DL1964GOI004281





भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 भारत हेवी इलेक्ट्रिकल्स लिमिटेड
 (भारत सरकार का उपक्रम)
 Bharat Heavy Electricals Limited
 (A Government of India Undertaking)
 सौरलार्क बिसिनेस डिविजन
 सौरल बिजनस डिविजन,
 SOLAR BUSINESS DIVISION

ई-मेल/E-mail : -----
 पी.बी.नं 1249, प्रो सी एन आर राव सर्कल
 आईआईएससी पोस्ट मल्लेश्वरम
 बेंगलुरु - 560 012
 P.B. No.1249, Prof. C N R Rao Circle
 IISc Post Malleswaram
 Bengaluru -560 012

Bids of only those bidders shall be evaluated who meet the Technical pre-qualifying requirements, if applicable.

6. Bidders, who are not registered with BHEL-SBD, are requested to get registered through online supplier registration portal available on <http://www.supplier.nhel.in>
7. **All corrigenda, addenda, amendments, time extensions, clarifications etc, to the invitation for MOU will be hosted on website only i.e. www.bhel.com & www.eprocure.gov.in/eprocure/app. Bidders are requested to visit constantly our websites to keep themselves updated.**
8. Please note that detailed offers are to be submitted including the following documents duly stamped & signed on each page:
 - Acceptance of GCC, Rev.R0.
 - Acceptance of Special Conditions of Contract (SCC).
 - Pre-qualifying Requirements (PQRs) –
 - a) Technical PQR
 - b) Technical Deviations and commercial deviations, if any as per format **enclosed at Annexure-II.**

Along with your offer, please submit a copy of this letter duly signed & stamped on each page as token of acceptance of all terms & instructions conveyed.

9. Order of Precedence

In the event of any ambiguity or conflict between the attached Documents, the order of precedence shall be in the order below:

1. Amendments/Clarifications/Corrigenda/Errata etc. issued in respect of the invitation to MOU by BHEL.
2. Notice Inviting Tender (NIT)
3. Special Conditions of Contract (SCC)
4. Technical specification & scope of work
5. General Conditions of Contract (GCC)

Thanking You.

Yours faithfully,

For and on behalf of BHEL

()/ (---MM/BHEL-SBD)

Enclosures:

1. Enquiry Letter with Terms & Conditions (This letter)
2. Technical Specification
3. Technical PQR
4. General Conditions of Contracts (GCC Rev R0)
5. MOU Format
6. Special Conditions of Contracts (SCC)



पंजीकृत कार्यालय 'बीएचईएल हाउस' सिरी फोर्ट, नई दिल्ली - 110 049
 वेबसाइट: www.bhel.com कॉर्पोरेट पहचान संख्या: L74899DL1964GOI004281
 Regd. Office: 'BHEL House' Siri Fort, New Delhi - 110 049
 Website: www.bhel.com Corporate Identity Number: L74899DL1964GOI004281





**SOLAR BUSINESS DIVISION
BENGALURU – 560012, INDIA
Group : Photovoltaic Module**


DOC. NO: SPV-4-02-00024

REV. 00 JOB NO.- STD.

PAGE 01 OF 01 DT 24.09.21

PRE-QUALIFICATION REQUIREMENTS


	Particulars	Bidder's Confirmation
1	The offer shall be quoted only by the original PV module manufacturer. Offer can be routed through agents/ channel partners, etc. However, BHEL shall sign the MoU/ enter into the contract/ PO will be released to the original manufacturer only.	Name of PV module manufacturer, complete address & contact details with email address, website to be provided. Datasheet of the offered model to be submitted.
2	The bidder should have manufactured and supplied the Solar PV Modules of cumulative installed capacity of 10 MWp or above using 300 Wp or above rating of modules and any source of indigenous or imported PV cells in any one of the last three financial years (FY 2018- 19, 2019- 20, 2020- 21).	Supporting documents to be provided (PO copy/ contract copy/ client certificates/ shipping documents, etc)

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC. NO: SPV-4-02-00025	
		Rev : 00	JOB NO- STD
		Page 1 of 8	

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest to the company

TECHNICAL SPECIFICATION
FOR
TC- MOU FOR SUPPLY OF SOLAR PHOTOVOLTAIC MODULES

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 2 of 8	

SOLAR PHOTOVOLTAIC (PV) MODULES


Solar photovoltaic (PV) modules consists of solar cells connected in series/ parallel configurations to deliver a standard required power output. The PV cell circuits are sealed in an environmentally protective laminate, and are the fundamental building blocks of PV systems.

1) TECHNICAL REQUIRMENTS:

Sl. No	Item	Remarks
1	PV Module Configuration	Poly or Mono crystalline (PERC) photovoltaic module with 72 nos of cells in 12X6 series configuration or 144 nos of cells (Half cut) in 24 x 6 configuration. The module construction and bill of material shall be as per vendor's approved IEC certification. Please enclose: i. Module overall assembly drawing with mounting holes ii. Data sheet with typical electrical characteristics, I-V curves, temperature coefficients etc.
2	Power Output	330 Wp or above, in 5 Watt band only. No negative power tolerance will be accepted.
3	System Voltage	Modules shall be suitable for 1500V DC System Voltage application.
4	Efficiency	16% (min) under STC
5	Fill Factor	0.75 (min)
6	Temp coefficient of Power Pmax (%)	-0.40 % / °C or better
7	Operating Conditions	SPV module shall perform satisfactorily in humidity up to 85% with ambient temperatures between -40° C & + 85° C, and shall withstand adverse climatic conditions
8	IEC Certifications	The PV modules supplied shall follow IEC standards as below. 1. IEC 61215-1:2016 (Design Qualification and Type Approval-Part 1) 2. IEC 61215-1-1:2016 (Design Qualification and Type Approval-Part 1-1) 3. IEC 61215-2:2016 (Design Qualification and Type Approval-Part 2) 4. IEC 61730-1:2016 (Safety Qualification – Part 1) 5. IEC 61730-2:2016 (Safety Qualification – Part 2) 6. IEC 62804-1:2015- (Test methods for the detection of PID - Part 1) 7. IEC 61701:2011 (Salt Mist Corrosion testing) 8. IEC 62716:2013-Edition 1 (Ammonia Corrosion testing) Vendors shall use Bill of materials for manufacture of PV modules as per subset of approved CDF of IEC Certificates. All IEC Certificates to be submitted with tender.

COPYRIGHT AND CONFIDENTIAL


The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 3 of 8	

8.1	BIS Registration	As per the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017, Government of India, PV Modules used in the grid connected solar power projects in India shall be registered with BIS and bear the Standard Mark as notified by the Bureau of Indian Standards. Enclose copy of BIS Registration for PV modules
8.2	ALMM Listing	In line with Office Memorandum No. 283/54/2018- Grid Solar ("Approved Models and Manufactures of Solar Photovoltaic Modules Order, 2019), dated 2nd January 2019 and subsequent amendments thereto issued by MNRE, Govt of India, the bidder shall comply with the relevant clause(s) on supply of PV modules.
9	Module Safety Class	Safety Class - II
10	BILL OF MATERIALS	
10.1	Solar cells	Crystalline Technology : Pl. indicate Cell Source : Size of Cells : Half cell or full cell configuration: Cell efficiency : No. of busbars Enclose a copy of Solar cell data sheet with electrical parameters.
10.2	EVA	Fast cure type, UV resistant, Gel content > 70 %.
10.3	Glass	High transmission (> 90 %), low iron, toughened glass with minimum thickness of 3.2 mm and bending less than 0.3%.
10.4	Back Sheet	The back sheet used in the crystalline silicon based modules shall be of 3 layered structure. The thickness of back sheet should be of minimum 300 microns with water vapour transmission rate less than 2.0 g/ m ² /day (38°C at 90% RH). The Back sheet can be fluoro polymer based or of any other well proven technology. The backsheet shall have globally benchmarked durability properties on Moisture barrier, Tensile Strength (Machine Direction & Transverse Direction), Elongation retention and UV stability and shall be able to withstand system voltage of 1500 V.
10.5	PV Module Frame	Corrosion resistant, anodized Aluminum. The anodizing thickness shall be 15 microns or better.
10.6	Junction box	IP67 grade with 3 nos. of bypass diodes, UV resistant & weather-proof

COPYRIGHT AND CONFIDENTIAL


**The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company**

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 4 of 8	

		<p>Junction box shall have two 4 sq mm UV resistant cables of minimum 1.2 metre length and plug-in connectors (male and female). JB shall be in compliance with IEC 60670 and class II insulation.</p> <p>Cables shall be of solar grade and shall conform to specification EN 50618.</p>
10.7	Adhesive for framing, junction-box fixing and potting	As per manufacturer's IEC test report
10.8	RFID	<p>Each PV module deployed must use a Radio Frequency identification (RFID) tag for traceability. RFID shall either be placed inside the laminate or behind name plate sticker or behind bar code label pasted on the back glass of PV module and must be able to withstand harsh environmental conditions during the module lifetime.</p> <p>RFID tag shall contain the following information:</p> <ol style="list-style-type: none"> Name of module manufacturer with country of origin Month & year of manufacture of modules Name of cell manufacturer with country of origin Month & year of manufacture of cells IV curve Wattage, I_{max}, V_{max}, V_{oc}, I_{sc}, & fill factor Module model number Unique serial number Date of obtaining IEC qualification certificates Name of test lab issuing IEC certificates Other relevant information etc. on traceability of solar cells and module as per IOS 9000 series
10.9	Nameplate	<p>Each module shall be provided with a name plate label (sticker) containing the following information:</p> <ol style="list-style-type: none"> Name of module manufacturer Module model number Serial number Polarity Terminal Leads Safety Class Application Class Overall Dimension (W x L x D) Weight in Kg P_{max}, V_{oc}, I_{sc}, I_{max} & V_{max} System Voltage

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 5 of 8	

		k. Relevant standards and certifying lab name l. Date of obtaining IEC qualification certificates m. Warnings, if any n. Other relevant information, etc Nameplate shall be clearly visible and shall not be hidden by equipment wiring. It shall be durable for the entire life of panel.
10.10	BOM as per CDF of IEC Certificate	Solar cells and module materials shall be used as per approved CDF as per IEC Certificate. Enclose copy of approved CDF as per IEC Certificate.
10.11	RFID Reader	One number RFID reader (gun type) has to be supplied free of cost by the bidder which has to be compatible to read the module I-V data from the RFID Tag & download the data to Computer. All necessary associated Software, Cables and accessories are to be provided free of cost along with the RFID reader.
10.12	.PAN File	Third Party verified .PAN file for each module wattage offered shall be provided for carrying out PVSYS calculations at our end.
10.13	Mounting hole Pitch	Pl. provide mounting hole pitch details. Horizontal : Vertical : Mounting hole size :
10.14	Earthing holes	Earthing holes to be provided on both the shorter arms/ longer arms of PV module frames.
10.15	I-V curves and temperature coefficients	The bidder shall provide the sample solar PV module electrical characteristics including current-voltage (I-V) performance curves and temperature coefficients of power, voltage and current. Enclose Sample I-V performance curve of for highest wattage of modules offered. Temperature coefficient of Power (Pmax) : Temperature coefficient of Voltage (Voc) : Temperature coefficient of Current (Isc) :

2) QUALITY ASSURANCE

Module Quality Plan, Data Sheet and GTP shall be subject to customer's approval. Each lot of modules shall be subject to Pre Shipment Inspection (PSI) by BHEL and BHEL customer or any third party.


Quality plan will include the following:

- I. Incoming Quality Checks on bought out item
- II. In-process Quality Checks
- III. Sample tests on final product by the customer

Detailed quality plan if any, will be published with individual enquiry.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 6 of 8	

3) WARRANTY

Product Warranty shall be for 10 years and Performance Warranty shall be for 25 years.

Solar PV modules used in solar power plants/ systems must be warranted for the product Workmanship for a period of minimum 10 years. Further, they shall also be warranted for their output peak watt capacity, for which module degradation should not be more than 0.75% / year till the end of 25 years from the completion of the trial run. Modules that do not meet the above criteria shall be replaced free of cost at BHEL's/customer's sole discretion.

4) INSURANCE or BANK GUARANTEE FOR POWER OUTPUT WARRANTY

The PV module power output warranty as per the technical specification shall be insured and backed up through an insurance policy by a reputed insurance company which will cover against the PV module power output warranty in case of insolvency or bankruptcy of the PV module manufacturer. The Bidder shall submit a suitable insurance from Third Party.


The Successful Bidder who is not able to provide insurance of PV modules as above, shall submit a Bank Guarantee for 10% of the contract value through BHEL consortium bank and shall be valid for a period of Ten (10) years and 90 days. The minimum validity of the Bank guarantee shall be Two (2) years and shall be renewed by the bidder of their own subsequently every Two (2) years prior to thirty (30) days of its expiry. In case the PV module fails to provide power output as per its performance warranty, and if the bidder fails to rectify, replace or repair the PV module, then BHEL shall carry out the necessary rectification, repair or replacement at its own discretion at the risk and cost of the supplier. The cost of such rectification, repair or replacement shall be encashed from the Bank Guarantee against PV Module Warranty. The same shall be replenished by the supplier within thirty (30) days, failing which the entire Bank Guarantee amount shall be encashed and all pending payment shall be withheld by BHEL till such amount is replenished by the supplier. In another instance, if the supplier becomes bankrupt or insolvent, then BHEL shall immediately encash the entire amount of the Bank Guarantee against PV Module Warranty.

5) PACKING & IDENTIFICATION OF PV MODULE

The modules shall be packed in seaworthy carton boxes made from triple-strength corrugated cardboard and resting on a wooden or plywood base. The PV modules packed in a carton box shall be of same power rating band only (330 Wp/ 335 Wp / 340 Wp...). Carton box and Pallets shall be adequately designed to prevent damage or deterioration during transportation to site in remote road conditions, handling and storage in site till the time of its installation. The carton box should display the manufacturer's name, number of modules, type, serial numbers, module wattage etc. Modules found damaged at the time of opening of the cartons in the project site shall be replaced free of cost by the module manufacturer.

COPYRIGHT AND CONFIDENTIAL

**The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company**

	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 7 of 8	

6) GENERAL CONDITIONS

- a) PV Modules shall be manufactured at the vendor's works only.
- b. Manufacturing clearance shall be given only after approval of Data Sheet, Bill of Material, manufacturing quality plan, Pre-Shipment inspection plan by BHEL's customer.

7) ENCLOSURES :


Sl. No.	Document
1.	Self-declaration letter for PV module manufacturing capacity
2.	Signed copy of BHEL Specification SPV-4-02-00025 Rev 00 for confirming to supply as per BHEL Specification.
3.	BIS certificate for offered model and manufacturer
4.	IEC 61215-1, IEC 61215-1-1, IEC 61215-2 , IEC 61730-1 & 2, IEC61701, IEC 62716 and IEC 62804 test certificates.
5.	Approved CDF (Bill of Materials) of PV modules as per IEC certificates.
6.	Over all PV module assembly drawing indicating mounting hole pitch & data sheet for PV modules.
7.	Al. frame Cross Section drawing
8.	Third party verified .PAN files for each wattage band of PV modules
9.	Data sheet for Solar cells used for manufacturing PV modules.
10.	Bill of Material for PV Modules that shall be used for this contract
11.	PV module installation and O&M manual
12.	Hard copy of above documents shall be enclosed along with the technical bid. Soft copy of all above documents and IEC test reports to be sent by e-mail to the email id as mentioned in tender documents.

8) SPECIFIC REQUIREMENTS:

The requirements including manufacturing capacity, installed capacity, experience certifications, etc which are specific to each project will be published in the corresponding individual enquiry as per Doc No. SPV-4-02-00026.

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company

 BHEL-SBD	SOLAR BUSINESS DIVISION BENGALURU – 560012, INDIA Group : Photovoltaic Module	DOC NO: SPV-4-02-00025	
		Rev : 00	JOB No- STD
		Page 8 of 8	

9) CONFIRMATION BY THE BIDDER :

Sl. No.	Item	Reply/ Acceptance by the bidder
1.	PV Module model numbers offered	
2.	Crystalline Technology of the offered model	
3.	Dimension of the PV modules offered	
4.	Output power bands of the models offered	
5.	PV Modules suitable for 1500V System Voltage application	
6.	Availability of IEC 61215-1, IEC 61215-1-1, IEC 61215-2, IEC 61730-1 & 2 , IEC61701, 62716 and IEC 62804 test certificates and IEC Test reports with CDF.	
7.	Junction box cable length : 1.2 Meters minimum	
8.	RFID Tag inside or outside the laminate	
9.	Supply of 1 no. of hand held RFID reader with accessories	
10.	Adherence to Manufacturing Quality Plan and Pre-Shipment Inspection	
11.	Bill of materials as per subset of the CDF of the IEC Certificates	
12.	Submission of Bank Guarantee for Power Performance warranty of PV modules	
13.	ALMM enlistment status of offered model and manufacturer	

10) COMPLIANCE

Sl. No.	Particulars	Bidder's Confirmation
1.	Confirmation to BHEL Specification SPV-4-02-00025	<p style="text-align: center;"><i>Yes / No</i></p> <p style="text-align: center;"><i>Please indicate deviations, if any.</i></p>

Signature of Tenderer with stamp

COPYRIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited.
It must not be used directly or indirectly in anyway detrimental to the interest of the company



BHEL-SBD

**SOLAR BUSINESS DIVISION
BENGALURU – 560012, INDIA**

Purchase Specification

Group : Photovoltaic Module

DOC. NO: SPV-4-02-00026

REV. 00 JOB NO.- STD.

PAGE 01 OF 01 DT 24.09.21

CRYSTALLINE PV MODULE

1.0 SPECIFIC QUALIFICATION REQUIREMENT OF THE PROJECT

SI No	Criteria	Bidder's response
1.1		
1.2		
1.3		

2.0 PHYSICAL CHARECTERISTICS



SI No.	Description	BHEL Requirement
2.1	Crystalline Technology	
2.2	Dimension in mm:	
2.3	Mounting hole configuration	
2.4	Operating Conditions	
2.5	Requirement on RFID position (Inside/ Outside)	

3.0 ELECTRICAL CHARECTERISTICS

SI No.	Parameter	BHEL Requirement
3.1	Required minimum Power Rating (Pmax)	
3.2	Temp. Coefficient of Power	
3.3	Efficiency	
3.4	System Voltage	
3.5	Fill factor	

COPY RIGHT AND CONFIDENTIAL

The information on this document is the property of Bharat Heavy Electricals Limited. It must not be used directly or indirectly in anyway detrimental to the interest of the company.

 BHEL Maharaja Company	 50 Years Golden Jubilee 1967-2014	SOLAR BUSINESS DIVISION	TECHNO COMMERCIAL MEMORANDUM OF UNDERSTANDING	SOLAR PV MODULES – Rev.00
--	--	------------------------------------	--	--------------------------------------

Ref.No: BHEL:SBD:SPV:MOU:PVMODULES:REV 00



BHEL /SOLAR BUSINESS DIVISION / BANGALORE

TECHNO COMMERCIAL MEMORANDUM OF UNDERSTANDING (EXCEPT PRICE) FOR SUPPLYING
SOLAR PV MODULES

BETWEEN

M/s. BHEL, SOLAR BUSINESS DIVISION, BANGALORE - 560012

&


BHEL REGISTERED VENDORS

DOC REF: BHEL: SBD: SPV: MOU: PVMODULES: REV 00

PRODUCT: SOLAR PV MODULES

VENDOR'S SIGNATURE WITH SEAL

BHEL SBD

	SOLAR BUSINESS DIVISION	<u>TECHNO COMMERCIAL MEMORANDUM OF UNDERSTANDING</u>	SOLAR PV MODULES – Rev.00
--	------------------------------------	---	--------------------------------------

Ref.No: BHEL:SBD:SPV:MOU:PVMODULES:REV 00

1.0 GENERAL:

- 1.1 This Techno commercial MOU is signed for the supply of SOLAR PV MODULES as per the agreed specifications & commercial terms & conditions so that these details need not be discussed repeatedly for future supplies.
- 1.2 The various aspects covered in this MOU are as follows & it is agreed to follow the same without any deviation.
 - 1.2.1 Commercial Requirements as per GCC R0 & SCC R0.
 - 1.2.2 Technical Specification
- 1.3 The party II agrees to take no deviation while submitting the offer, other than deviations agreed by BHEL with or without %age of cost of withdrawal as agreed in TC-MOU.
- 1.4 Same cost of withdrawal will be loaded in quote at the time of evaluation of price in enquiry, however bidder can withdraw such deviation in offer at the time of enquiry.
- 1.5 If any deviation is taken in the technical, commercial & quality points in the offer submitted by party II, the offer will be rejected straight away. Any request for revaluation will not be entertained.
- 1.6 If BHEL has any other requirement/deviation from the MOU for a particular enquiry, it shall be clearly given in the enquiry itself. Confirmation for that requirement/deviation alone is to be given by the bidder. All other terms & conditions shall be as per the MOU. Such deviations/requirements, if any, shall pertain to that enquiry alone and MOU shall be followed for all other enquiries unless otherwise specified.
- 1.7 This MOU shall be valid from _____.
- 1.8 The MOU shall stand valid for TWO (02) years from the date of finalization of the MOU. The MOU validity may be extended eve after the initial period of TWO years if required by BHEL, with the consent of party II. However, in case any change is required; the MOU may be amended before the expiry of the validity with mutual consent.

VENDOR'S SIGNATURE WITH SEAL

BHEL SBD