



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

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आईआईएससी पोस्ट मल्लेश्वरम बेंगलूरु - 12

P.B. No.1249, Prof. C N R Rao Circle

IISc Post Mallewaram

Bengaluru-560 012

Ref.No:SBD:TC:MOU:SPV:MMS/COVLTR

Dated: 1, .12.2021

Subject: **Invitation to Enter into MOU for Freezing Techno Commercial Conditions and Specification for procurement of Module Mounting Structures (MMS) for PV Projects.**

Dear Sirs,

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.

Under the present business scenario and unprecedented demand, we have decided to review our procedures and system related to the procurement of various 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 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 enclosure -2 to this letter with all details required therein including % cost of withdrawal of deviation. Only

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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.

- Enquiries shall only be addressed to parties with whom MOU has been entered although bound by 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 project specific details like quantity, delivery etc. will be provided in the enquiry for the bidders to quote their prices. Bidders need to go through the project specific additional requirement while quoting against our enquiry.
- While submitting your quotation, you will be required to attach a letter (Enclosure-3) confirming that the supply will be as per agreed technical specification and commercial & technical conditions (SCC & GCC) with BHEL furnishing the reference of MOU (Memorandum of Understanding) to be entered after due clarification / discussions.

With the aforesaid in mind, BHEL invites expression of interest from the reputed manufacturers (OEMs) of **Module Mounting Structures(MMS)** (refer qualifying & other requirements) to enter into a Memorandum of Understanding for sourcing of the various project requirements 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 NO.	PS-439-1382 REV00
2	GENERAL CONDITIONS OF CONTRACT	GCC R0 attached in NIT
3	SPECIAL CONDITIONS OF CONTRACT	SCC Rev 00 attached in NIT

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- EPD Tender box (Reception of EPD)

C/o. AGM / MM
M/s BHARAT HEAVY ELECTRICALS LTD., SOLAR BUSINESS DIVISION,
Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012



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E-MAIL: pragadeeshtg@bhel.in, srinivasa.a@bhel.in

Ph. No. +91-080-22182269, +91-080-22182262

DUE DATE FOR SUBMISSION OF OFFER: 2- .12.2021 14:00 HRS IST

It shall be the responsibility of the bidder to ensure that the offer is delivered on or before the due date by **14:00 HRS IST**. **The offer has to be deposited in tender box only.**

Bids shall be opened at **14:30 HRS IST** on the due date in the presence of authorized representatives of the bidders, who may like to be present.

The bidder is required to clearly mention,

1. Ref. No: **SBD:TC:MOU:SPV:MMS**, 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.

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

Ref. No: **SBD:TC:MOU:SPV:MMS** & due date to be mentioned in subject of mail.

ENQUIRY TERMS AND CONDITIONS

No price bid shall be submitted along with the offer.

Bidders shall submit their offers meeting the requirements of the following documents (enclosed) included in this Enquiry Letter:

General Conditions of Contract (GCC) Rev R0 comprising of: Instructions to Bidders and General Commercial Terms & Conditions; Technical Specification; Special Conditions of Contract (SCC); Qualifying Requirements as per NIT.

Offer shall be submitted strictly in accordance with the requirements of the above documents. 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 Enclosure-2 "DEVIATION SHEET (COST OF WITHDRAWAL)"** along with reasons for taking such deviations.

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Regd. Office: 'BHEL House' Siri Fort, New Delhi – 110 049



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Cost of withdrawal for the deviations, for which, the “Cost of withdrawal” is not specified, shall be taken as NIL.

Bidder to note all the points mentioned in “Notes” of Enclosure-2.

All the above Tender Documents shall automatically become a part of the MOU after its finalization.

Bidder has to submit “NO DEVIATION CERTIFICATE FOR COMMERCIAL TERMS AND CONDITIONS as per General Conditions of Contracts (GCC, Rev.R0) Annexure-XII” in case of no deviations.

5. Purchaser shall be under no obligation to accept any offer and shall be entitled to accept or reject any/all offer(s) in part or full without assigning any reason whatsoever.
6. All correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address:

<u>Commercial</u>	<u>Technical</u>
Srinivas Anakapalli/ MM BHEL-EPD, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012 E-MAIL: srinivasa.a@bhel.in Ph. No. +91-080-22182269 (9916999898)	VIJAY CHOUDHARY/Engg BHEL-EPD, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 12 E-MAIL: vijayk.choudhary@bhel.in Ph. No.9415041583)

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.

7. **Qualifying Requirements:**

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

Bids of only those bidders shall be evaluated who meet the qualifying requirements as applicable.

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8. Bidders, who are not registered with BHEL-EPD, are requested to get registered through online supplier registration portal available on <http://www.supplier.bhel.in>
9. **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.**
10. 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).
 - Qualifying Requirements (as applicable)
 - Technical Deviations and commercial deviations, if any as per format **enclosed at Enclosure-2.**
 - **Annexure –As per attached in NIT.**
 - 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.
11. 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. Qualifying Requirements
 5. Technical specification & scope of work
 6. General Conditions of Contract (GCC)

Thanking You.

Yours faithfully,

For and on behalf of BHEL

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Srinivas Anakapalli
(DM/MM/BHEL-SBD)

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Enclosures:

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

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Technical specification for supply of Module Mounting Structures (MMS) for different Solar PV Projects across India

PS-439-1382

REV NO: 00


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Technical specification for supply of Module Mounting Structures (MMS) for different Solar PV Projects across India

Revision details :Rev.00	Prepared VKC	Approved PM	Date: 01.12.2021
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ACRONYM USED:

1. MTC = Mill test Certificate.
2. MQP= Material quality plan.
3. OEM=Original Equipment manufacturer.
4. MMS = Module Mounting Structures.
5. PSI= Pre shipment inspection.

1.0 INTRODUCTION

This document describes the technical specification for Module Mounting Structure (MMS) that constitute the solar array of the plant. MMS are steel structures over which solar PV modules are mounted. The MMS supply BOQ shall comprise of columns, rafters, purlins, bracings, sag angles, SMB angles, earthing strips, purlin splice, purlin cleat, column plates, column splice etc. and having varying thickness from 1.6 mm to 6 mm and different quantities as per design requirement.

2.0 VENDOR SCOPE OF SUPPLY

#	Item description	Anticipated Qty.	Fabrication Details
1	Supply of MMS	42000 MT	As per Sample Drawings

3.0 ENCLOSURES TO THIS TENDER (FOR TENDER PURPOSE ONLY)

1. Sample GA & Fabrication Drawings
2. Sample MQP

4.0 SUB-VENDORS OF STEEL SHEETS


Vendor shall procure the raw materials (steel sheets/plates) from OEM sub-vendors viz TISCO, SAIL, JINDAL, RINL. In case of any sub-vendors other than the above, vendor to request the alternate sub vendor, however End customer /BHEL reserves the right to approve or disapprove the same. For pre galvanized steel, bidders to inform their vendors to BHEL at the time of tender submission.

5.0 BOM CATEGORIES, MATERIALS SPECIFICATION & COATING FOR STRUCTURAL STEEL WORKS:

As per Annexure-A.

6.0 FABRICATION

Fabrication of MMS shall be as per the drawing furnished by BHEL along with the Manufacturing Clearance.

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Sample GA & Fabrication Drawings are attached in the tender document for reference purpose. However, detailed drawing specifying the final section, length and dimensions of each member of MMS will be furnished with manufacturing clearance only. Vendors are advised to study the drawing circulated with the tender documents in detail to understand the specification, nature and tolerances of fabrication. No claim related to fabrication issues shall be entertained after placement of purchase order.

7.0 GALVANIZATION/CORROSION PREVENTION/PAINTING:

The MMS shall be hot dip galvanized with average coating thickness to be minimum 80 micron and local coating thickness shall be minimum 70 microns for protection against corrosion.

For steel sections with thickness above 5mm the minimum galvanization thickness to conform to IS-4759. Galvanization shall be measured with elcometer and Vendor shall submit the report. Material can be sent for testing to NABL accredited laboratory as and when required at cost of vendor. Test to determine corrosion performance of MMS as per the applicable IS/ASTM, as and when required.

PRE GALVANIZED MATERIALS

Pre-galvanized material coating shall conform to IS: 277. Galvanisation shall not be less than 550 GSM (both side) and base metal thickness to be as per BHEL BOM. The exposed edges of the material after slitting/punching/drilling/cutting etc., shall be painted with zinc rich paint/Spray for edge protection.

PAINTING OF STEEL SURFACES EMBEDDED IN CONCRETE:

For the portion of Steel surfaces completely embedded in Concrete as reinforcement for foundation systems, the surface shall be prepared by Manual Cleaning and provided with Primer Coat of Chlorinated Rubber based Zinc Phosphate Primer of Minimum 50 Micron Dry Film Thickness (DFT). The embedded portion of column in concrete shall be provided in final BOM along with Manufacturing clearance.


Bidder shall also use principles governing design that shall prevent or reduce the risks of corrosion as per IS 9172 and relevant IS codes.

8.0 MANUFACTURING QUALITY PLAN (MQP)

A typical sample of MQP for the MMS is enclosed. Inspection reports to be made with respect to the same. Mass fabrication of MMS- to commence from the date of Manufacturing Clearance from BHEL only.

9.0 PROTOTYPE INSPECTION

A prototype MMS structure of 1 MMS Table has to be made and inspected by BHEL/End Customer personnel. The inspection shall be carried out at pre-galvanized assembled stage and post galvanized assembled stage. The prototype will be inspected with all MMS members including fasteners and 2 nos of PV Module frame. The PV Module frame drawing will be supplied by BHEL and Vendor has to make 2 complete PV Module frames using angles or with

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other available materials. As the prototype is done for dimensional check so the material strength of MMS members and fasteners need not be as per BOM but the dimensions to be exactly as per fabrication drawings. Vendor have to absorb the cost of proto type and no extra cost will be paid for Proto.

Mass fabrication of Super Structure to commence from the date of prototype clearance only.

10.0 TEST REPORTS

Every PSI Call should accompany the following reports.

- I. MTC.
- II. Internal inspection report (Dimensional + galvanization thickness) as per instruction specified in BHEL MQP and BHEL Drawing.
- III. Photographs of the offered lot.
- IV. BHEL- EDN will go through the reports and depute personnel for PSI.
- V. PSI to be done by BHEL/TPI/Customer

Before dispatch of material BHEL may carry out required tests on random samples of MMS from the NABL accredited testing lab for Raw Material chemical properties, Mechanical properties etc. The cost towards all these tests shall be borne by vendor.

11.0 PACKING INSTRUCTIONS


The MMS components shall be packed in bundles with steel straps with corner wedges of plastic/fibre/rubber material to prevent damage to surface during handling. Adequate no. of steel straps shall be provided depending upon the length of the MMS components and bundles shall be in lots of 50 nos. /100 nos. for easy handling and accounting. Baby parts like purlin splice, purlin cleat, column plates, column splice shall be adequately packed showing the total qty on the package. The packaging of baby parts to such that no damage and loss in qty happens while unloading at site.

12.0 MARKING INSTRUCTIONS

All MMS shall be marked for part identification on 100% basis. As MMS are being supplied by multiple vendors, hence each super structure items have to mark his vendor initial on each piece. Vendor to indicate the initial which he will mark along with the Technical specification to BHEL for approval as multiple vendors should not have same initial. The Marking shall be done as per final BOM issued along with manufacturing clearance.

13.0 DELIVERY SCHEDULE

1. Vendor to offer the prototype of 1-MMS Table within 10 days of BHEL providing the complete drawings.
 2. Final drawing of MMS shall be issued after Prototype only and Mass manufacturing to begin with these drawings.
-

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3. Vendor has to deliver the material at minimum required MT per Month as indicated in tender from the date of issue of mass manufacturing clearance/final drawings.

14.0 WARRANTY

1. The supplied Module mounting structures shall be warranted for a minimum period of 18 Months from the date of supply.
2. During the period of Warranty, the vendor shall remain liable to replace any defective parts, that becomes defective in the plant due to solely from faulty materials or workmanship, provided such defective parts are not repairable at site. After replacement the defective parts shall be returned to the vendor's works at the expense of the vendor's unless otherwise arranged.
3. If any defects not remedied within a reasonable time, BHEL may proceed to do work at the vendor's risk and cost, but without prejudice to other rights, which the BHEL may have against the vendor in respect of such defects.

15.0 EVALUATION CRITERIA


Following Seven (7) Categories of BOM requirement is there based on general design of MMS:

1. Category-BOMHR2.5 for MMS Column: 2.5 mm / 3.15 mm
2. Category- BOMHR2 for Rafter/Bracings/Purlins/Sag Angles: 2 mm
3. Category- BOMHR4 for Column Plate, Purlin Cleat, SMB angle, purlin splice, ES etc.: 4 mm & Above:
4. Category- BOMHR1.6 for Purlins/Sag Angles: 1.6 mm and above
5. Category-BOM PG1.6 for Pre-Galvanized Rafter/Purlin/Bracing: 1.6 mm and above
6. Category-BOM PG1.2 for Pre-Galvanized Rafter/Purlin/Bracing: 1.2 mm
7. Category- BOM HDAZ 0.9 for Hot-dip Aluminium-Zinc alloy metallic coated sheet steel strip and sheet sections: 0.9 mm and above

15.1. Evaluation Criteria for Fabrication Capacity:

For BOM category wise evaluation of bids, following are the evaluation criteria for fabrication capacity:

Category of Vendors	Evaluation Criteria for Fabrication capacity	Required Capacity in MT per Month for

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		Evaluation
Category-CRFI (200 MT)	a. Bidder to be a manufacturer and to have in-house cold roll forming facility with minimum capacity for C or Z or any other profiles all put together (A self-declaration on bidder's letter head to be provided). b. Bidder to provide the capacity proof for any 1 month within the past three years- Dec'18 –Dec'21 showing minimum capacity per month.	200
Category- CRFII (500 MT)		500
Category-CRFIII (800 MT)		800
Category-CRFIV (1000 MT)		1000
Category-CFV (200 MT)	a. Bidder to be a manufacturer and to have in-house cold forming facility with minimum capacity for C or Z or any other profiles all put together (A self-declaration on bidder's letter head to be provided). b. Bidder to provide the capacity proof for any 1 month within the past three years- Dec'18 – Dec'21 showing minimum capacity per month.	200
Category-CFVI (500 MT)		500

Calendar months only to be considered for evaluation.

To substantiate above, required documents like delivery challans or tax invoice or relevant documents to be furnished.

15.2. Evaluation Criteria for Hot Dip Galvanization facility:

- a.) Either the bidder to have in-house galvanization facility.
Or
- b.) Has HDG facility in one of it's subsidiary company.
Or
- c.) Has a tie up with another company for HDG Works.

For Sl. a. A self-declaration on bidder's letter head to be provided.

For Sl. No b.) and c.) proper documentation (Stamp paper for tie up/Documentation indicating Sister Unit, as applicable) to be provided. Once a tie-up is declared during