

**BUREAU OF INDIAN STANDARDS
NRO LABORATORY, MOHALI**

Our Ref: NROL/Mech/Solar/SFPC-031


Date: 15-01-2008

**Subject: FABRICATION AND SUPPLY OF TEST FIXTURES FOR THERMAL
SHOCK AND RAIN PENETRATION TEST OF SOLAR FLAT PLATE
COLLECTOR AS PER IS 12933(Part 5):2003**

Technical & Commercial Bids are invited for the supply of above equipment, from the nationally reputed & bonafide manufacturers / authorized dealers in separate SEALED covers, which should reach the **undersigned latest by 15 00 h, on 11 Feb 2008**, at the following address:

BUREAU OF INDIAN STANDARDS
Northern Regional Office Laboratory,
Plot No. B-69, Phase-VII,
Industrial Focal Point,
Mohali,
Punjab – 160 055.

- A. Instructions, Terms and conditions of supply, etc are given in Annex-I, II & III.
- B. The detailed Specification(s) of the above mentioned equipment(s)/item(s) are given in Annex-IV.
- C. **The technical Bids shall be opened in the Conference Hall, at the address mentioned above at 1600 h on 11 Feb 2008 and in the presence of such tenderers or their duly authorized representatives, who may like to attend.**
- D. Please note that the envelopes containing Technical & Commercials Bids are sealed properly i.e. either wax sealed or with adhesive cello tape on both ends. Unsigned Bids, Unsealed /stapled envelopes and bids without EMD shall be summarily rejected. No exemption whatsoever for payment of EMD shall be accorded.
- E. This office reserves the right to reject any /all bids without assigning any reasons whatsoever. Late tender will not be accepted by any means & this office will in no way be responsible for any reasons of late submission of bids.
- F. The specification and terms & conditions can also be downloaded from **BIS Website – www.bis.org.in**


(A.K.Nagpal)
Scientist-F & Head

Encls: as above

**BUREAU OF INDIAN STANDARDS
NRO LABORATORY, MOHALI**

Our Ref: NROL/Mech/Solar/SFPC-031

ANNEXURE-I

INSTRUCTIONS TO BIDDERS

1. Sealed tenders are invited (under two bid system i.e. Technical Bid and Financial Bid, for details please see Annexure-II) separately from reputed manufacturers and their accredited/sole selling agents for the "Supply, Installation, Commissioning and Satisfactory Demonstration" of **TEST FIXTURES FOR THERMAL SHOCK AND RAIN PENETRATION TEST OF SOLAR FLAT PLATE COLLECTOR AS PER IS 12933(Part 5):2003** (For detailed specifications, please see Annexure-IV).

2. **Security Bid (EMD) – Rs 5000.00 (rupees Five thousand only)** may please be sent in the form of a **Crossed/Account payee demand draft from a Nationalized Bank, payable at Chandigarh in favour of "BUREAU OF INDIAN STANDARDS"**. The Demand Draft of the EMD be placed inside a separate sealed envelope clearly marked 'EMD' on the right hand side corner of the envelope and be stapled along with the sealed envelope containing the Financial Bid.

3. **TENDER DOCUMENT** : Bidders may also download the Tender Notice, specifications, terms & conditions. from **BIS Website at www.bis.org.in**

4. Tenders not accompanied with 'EMD' shall be summarily rejected.

Last date for receipt of Bids is: **15 00 h, on 11 Feb 2008**

Date of opening of Technical Bids is: **16 00 h, on 11 Feb 2008**

(N.B: In the event of any of above date(s) being declared a holiday, the last date of submission of completed bid(s) shall be on the next working day.)

5. The tenders should be addressed to:

Head
Northern Regional Office Laboratory (NROL),
BUREAU OF INDIAN STANDARDS,
Plot No. B-69, Phase-VII,
Industrial Focal Point,
Mohali 160055, Punjab.

Phone No.0172-3246935, 2236722. FAX No.0172- 2237212, 2236722
e.mail: nrol@bis.org.in

**BUREAU OF INDIAN STANDARDS
(NORTHERN REGIONAL LABORATORY)
ANNEXURE-II**

DETAILS OF TERMS AND CONDITIONS OF CONTRACT

Ref: NROL/MECH/SOLAR/SFPC-031

Instruction to bidders

1. The BUREAU gives FIRST PREFERENCE in its purchase to goods bearing ISI CERTIFICATION MARK and second preference to those which conform to the relevant Specifications.
2. The Tenderers are requested to give detailed tender in their own forms in two bids i.e.

Part - A: Technical Bid. 2 copies

Part - B: Financial Bid. 2 copies

(1st copy – in original, 2nd copy – Photostat Copy)

The Technical & Financial Bids should be sealed and sent separately in sealed envelopes. Such Bids shall remain valid for a period of 180 days from the date of opening.

3. The Date and Time of opening for Part B (Financial Bid) will be intimated only to prequalified and technically acceptable tenderers for the item at a later date.
4. Quotations/Bids, qualified by indefinite expressions as "Subject to immediate acceptance, Subject to prior sale", etc. and incomplete quotations are liable to be summarily rejected.
5. Each tender document shall be accompanied with EMD of Rs 5000.00 (rupees five thousand only). The demand draft (from a Nationalized Bank) for the EMD amount shall be drawn in favour of BUREAU OF INDIAN STANDARDS payable at Chandigarh/Mohali. The sealed envelope containing EMD should be superscribed "EMD" and stapled separately with the envelope containing the commercial Bids. The Earnest Money of successful bidder will be returned only after installation, commissioning, satisfactory demonstration and acceptance of the equipment by the user Scientist/Head as per the terms of our purchase order. The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned. Earnest money deposit shall be liable to be forfeited, if the successful tenderer withdraws the tender after opening.

6. (A)Tenders not accompanied with Demand Draft/Bank Guarantee towards "Earnest Money Deposit" will summarily be rejected.
- (B) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.
- (C) Unsigned Tenders will also be rejected.
7. Conditional Offers will not be considered.
8. **TECHNOLOGY CERTIFICATES**
The supplier should issue a certificate stating that :
a) The equipment is of latest technology :
b) The equipment may be upgraded as and when required by BIS.
c) The equipments will be promptly and properly serviced by them whenever desired by BIS even after 10 years of its procurement/installation by BIS.
9. BIS shall pay 90% of the cost after satisfactory supply installation & commissioning and the Balance of 10% as contract performance security would be paid after expiry of warranty period. Supply means "Supply, Installation, Commissioning and satisfactory demonstration of the whole system and training".
10. BIS will not provide any accommodation/transportation for the Engineers/ Representatives for attending Installation, Commissioning and Demonstration Work. It is the absolute responsibility of the Principal Supplier/Indian Agent to make their own arrangements.
11. **WARRANTY:** The equipment is to be guaranteed for trouble free performance for a **minimum period of two years** after installation. The warranty period of the equipments may be stated clearly in the Technical Bids. In case the same is not found stated, it will be presumed that warranty period as mentioned in their respective specifications of the tender document (if specified), is applicable. The manufacturer shall also submit Annex-III along with the tender document duly signed and stamped.
12. The defects, if any, during the warranty period are to be rectified free of charge by arranging free replacement wherever necessary.
13. Indicate the name of firm, address, contact person, phone no. and fax no. etc of onsite warranty, agency that shall maintain during warranty and undertake Annual Maintenance Contract/Comprehensive Service Maintenance Contract beyond warranty shall be given in the technical bid. In case of foreign quote, the Indian Agent who shall maintain during warranty and AMC beyond warranty shall be given in the Technical Offer.

14. The supply of spare parts is to be guaranteed at least for a period of 10 years after the supply of the equipment.
15. Please mention clearly in the Technical Bids regarding address of arrangements for service/repair of the equipments available. Suppliers having such arrangements near Chandigarh/Mohali would be preferred.
16. The Equipments are required to be installed at locations indicated in the Tender Notice and subsequently training is to be provided free of cost to the concerned scientists/testing personnel on site, wherever necessary.
17. Tenders complete in all respects for each item should be submitted separately for Technical as well as Financial bids as follows:
- a. One sealed envelope superscribed "Technical Bid" will contain only the Technical Specifications of the indented equipment as per details in Annexure-IV of this document.
 - b. A Second sealed envelope superscribed "Financial Bid" will contain only the financial bid in which price (alongwith warranty) and 3 year comprehensive warranty charges, Annual Maintenance Contract Charges [AMC] etc. and any other information, which has financial implications, shall only be given. The Demand Draft of the EMD be placed inside a separate sealed envelope clearly marked 'EMD' on the right hand side corner of the envelope and be stapled along with this sealed envelope containing the Financial Bid. However, the EMD of the successful Bidder may be adjusted against Performance Bank Guarantee.
 - c. Both the above sealed envelopes are to be kept in a sealed envelope, superscribed as Tender No _____ for _____ (Item/Name) due on _____ 2007 and duly sealed.
18. The **Technical Bid [Part A]** should accompany complete specification, Manufacturer's name, address and following details :
- a. Declaration regarding expected life span of equipment and accessories
 - b. List1: list of standard accessories being provided with equipment should be given separately.
 - c. List2: list of optional and any other essential items/accessories required for the maintenance of the equipment for the next three years.
 - d. List3: list of infrastructural facilities and consumables to be arranged by the Bureau for commissioning of equipment,
 - e. List4: list of the Users in India with complete postal address to whom the similar equipment has been supplied,
 - f. Near locations in India from where after sales services shall be provided along with the name of Servicing Agent,
 - g. Technical Literature of the equipment along with necessary photograph/ drawings, if any,

- h. Signed copy of terms and conditions (all pages to bear signature of authorized signatory and duly stamped) denoting that the terms and conditions stipulated by the Bureau are acceptable. Deviations if any to be detailed out in a deviation sheet, however the same will be accepted subject to the decision of the Competent Authority of the Bureau. In case there are no deviations it should be clearly indicated as 'Nil'. In case no deviation sheet is filled up it will be presumed all terms and conditions are acceptable and no query will be entertained at a later stage.
 - i. Specification sheet duly filled in with all details.
 - j. Special preferences/conditions, if any, should be indicated in Specification sheet for the equipment or in the Deviation sheet.
19. Cost of the items should be mentioned clearly in the **Financial Bid [Part-B]**. The following details need to be included:
- a. Price break-up of main equipment and optional accessories (as per the specification) and consumables (for the accessories and consumables which are not part of the standard equipment) to be supplied by the party,
 - b. The Comprehensive warranty charges for next three years after the expiry of warranty period,
 - c. The **rates quoted shall be valid for a period of 180 days from the date of opening of the tender.** However wherever applicable the current value of the foreign currency would be applied at the time of placing the order.
 - d. Packing, Forwarding, Freight & Insurance and Commissioning Charges, if any extra, may be quoted separately in Financial Bid.
 - e. In case your quote is F.O.R./F.O.B. basis, estimated insurance coverage charges may be indicated.
 - f. CIF (Carriage Inward & Freight), at site value both by Airfreight and Ocean freight, where applicable.
 - g. The Bids should clearly give break-up of cost of each equipment. The rates quoted should separately indicate Basic Cost, Excise Duty, Sales Tax, P&F charges, Freight, Insurance, VAT etc. Rates quoted should specifically state Sales Tax, Excise Duty or any other taxes/charges. In absence of any such stipulation, it will be presumed that the prices include all such charges and no claim for the same shall be entertained. Form C/D shall not be provided by BIS.
20. In case of foreign quote, the Principal supplier should clearly indicate the address of the Indian Agent and percentage (%) of Agency Commission payable if any, to be paid to the Indian Agent in Indian Currency.
21. Indicate the names and addresses of the Indian reputed Organizations where you have supplied the similar equipment and may attach the satisfactory performance report of the equipment from user Organization.

22. (A) If you have supplied identical or similar equipment to Govt/CSIR Labs. /National Institutes, the details of contact person, phone numbers, fax, e.mail i.d., for such supplies for the preceding three years should be given together with the prices eventually or finally paid. Preference will be given to those who have supplied to such Laboratories/Institutes
- (B) Based on the above information BIS will have its option to obtain details of the equipment, their performance, after sales services etc. for evaluation of the tender, directly from the concerned Labs/Scientists etc.
- (C) Clause by clause compliance with the technical specification in this tender is required. Deviation from the specification, if any, or better alternative offer by the supplier and suitability to substitute the specified conditions must be clearly brought out.
- (D) Technical specification shall be as per the requirements laid down. However, any deviations offered may be considered by the Technical Committee subject to suitability and the needs of the Organisation.
- (E) The specifications of equipments, have been specified at Annex-IV. However, bidder(s) may be required to arrange practical demonstration of equipment/model(s) quoted by them before finalization of order.
- (F) The Bidder has to state in detail the Electrical Power/UPS requirements, floor space, head room, foundation needed and also to state whether Air-conditioned environment is needed to house the system and to run the tests. i.e. pre-installation facilities required for installation may please be intimated in the technical bid.
- (G) Bidder shall be responsible for installation/demonstration wherever applicable and for after sales service during the warranty and thereafter.
23. Fax / E-mail / Telegraphic / Telex tenders shall not be considered.
24. All the Bank Charges inside and outside India, including opening of LC, communication, confirmation, amendments etc., will have to be borne by supplier only.
25. If applicable, with regards to terms of payment including period of warranty, we prefer to release the payment on BILL Basis (excluding Indian Agency Commission) after receipt of consignment in good condition and satisfactory installation, and commissioning thereof. Alternatively, depending upon the value and foreign exchange regulations the payment can also be considered through Sight Draft / Letter of Credit through the State Bank of India for the order value excluding the Indian Agency Commission. However, the detailed payment for Sight Draft / Letter Credit is mentioned above in this tender terms and conditions.
26. Details of after-sales services offered by you are to be made clear in the tender.
27. The delivery of the stores is required to be made within 30 days of receipt of order. If, it is not possible for you to effect delivery within the period, you are required to specify the date by which you can guarantee delivery of

the stores. Delivery period mentioned in the Purchase Order should be strictly adhered to. Otherwise the tenderer will forfeit EMD, after maximum 10 days of the last date of delivery.

28. All goods received would be subjected to inspection, by BIS before or after receipt or commissioning (as applicable) and the decision of BIS shall be binding. Rejected items/goods/stores shall be removed by the supplier at his own cost and risk, within 30 days of receipt of notice for the removal of such goods, and no liability, whatsoever, on the Bureau shall be attached for the rejected/disapproved goods/items/stores.
29. The Bureau takes no responsibility for delay, loss or non-receipt of tenders after dispatch.
30. In case of non compliance with the Terms & Conditions of the contract, the Bureau reserves its right to:
 - a. Cancel/rescind/revoke the order if supply is not made in time and is not conforming to the required specification.
 - b. Impose Penalty up to 1% of the total value of the order for a delay of every seven days after the schedule date subject to the ceiling of a maximum of 10% of the total value of the order.
31. Goods should not be dispatched until the Vendor receives a firm order.
32. Firms which have already supplied similar equipment to BIS shall indicate details of installation/commissioning.
33. **Printed conditions of the quotation will not be binding on BIS.**
34. BIS will not be responsible:
 - a. For delayed / late quotations submitted / sent by Post / Courier etc.
 - b. For submission / delivery of quotations at wrong places other than this office.
35. All question, disputes or differences arising under, out of or in connection with this Bid document shall be subject to the exclusive jurisdiction of Chandigarh /Mohali Court

36. The Bureau reserves the right to accept any tender in full or in part or to reject the lowest or any or all tenders without assigning any reason.



(A.K.Nagpal)
Scientist-F & Head

Page 9/15

Annexure-III

We warrant that everything to be supplied by us hereunder shall be brand new, free from all defects and faults in materials, workmanship and manufacture and shall be of the highest grade and quality and consistent with the established and generally accepted standards for material of the type ordered, shall be in full conformity with the specification, drawing, or samples, and operate properly. We shall be fully responsible for its efficient operation. This warranty shall survive inspection of and payment or, and acceptance of the goods, but shall expire (except in respect of complaints of which the contractor has been notified prior to such date) 24 months after their successful installation, commissioning and acceptance by BIS.

The obligations under the Warranty expressed above shall include all cost relating to labour, spares, maintenance (preventive and unscheduled) and transport charges from site to the manufacturer's works and back and free repair/adjustment or replacement at site or any parts of the equipment which under normal and proper use and maintenance proves defective in design, material or workmanship or fails to conform to the specification previously given by BIS to the contractor.

Signature of the Vendor

Date: _____
Place: _____

DEVIATION SHEET

1. Column 1, 2 and 3 to be filled up, Column 4 is for BIS use
2. More than one may be used for filling up deviations from the specified terms and conditions

| Sl no | Clause no and ref of BIS document (annexure no) | Type of deviation | Acceptable/Not acceptable (FOR BIS USE) |
|-------|---|-------------------|---|
| (1) | (2) | (3) | (4) |
| | | | |

Signature of the Vendor

Date: _____

Name _____

Place: _____

Seal of Firm

Page 11/15

ANNEXURE-IV

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|--|--|
| FABRICATION AND SUPPLY OF FIXTURES FOR THERMAL SHOCK AND RAIN PENETRATION TEST OF SOLAR FLAT PLATE | |
| Ref No: NROL/MECH/SOLAR/SFPC-031 | |
| Equipment Name: | |
| FABRICATION AND SUPPLY OF FIXTURES FOR THERMAL SHOCK AND RAIN PENETRATION TEST OF SOLAR FLAT PLATE | |
| Quantity: | 1 |
| Sl. No. | <p>NROL SPECIFICATION</p> <p>Enclosed at page 13 ,14 and 15</p> <p>BIDDER'S RESPONSE</p> <p>(Bidder shall indicate "Complied" or "Non Complied" as applicable in each row. In case of "Non Complied", detail shall be mentioned)</p> |

BUREAU OF INDIAN STANDARDS
(BANGALORE BRANCH OFFICE LABORATORY)
EQUIPMENT SPECIFICATION

| | |
|-------------------------|---|
| EQUIPMENT SPEC. CODE | : SFPC 031 |
| NAME OF THE EQUIPMENT | : TEST FIXTURE FOR PERFORMANCE TEST |
| PROPOSED FOR BIS LABS | : NROL |
| TOTAL QUANTITY REQUIRED | : One No. |
| 1.0 | <p>Scope</p> <p>Prescribes the test fixtures and requirements for the following tests:</p> <ol style="list-style-type: none"> External thermal shock test as per Cl. 5.4 of IS 12933 (Pt.5). Internal thermal shock test as per Cl. 5.5 of IS 12933 (Pt.5). Rain Penetration Test as per Cl.5.6 of IS 12933 (Pt 5) |
| 2.0 | <p>Requirement.</p> <p>2.1 MS Angle frame work as per [⊗] Fig 2.13 to mount the solar flat plate collector at an inclination of 30° to the horizontal with provision for grouting on the ground. The welding shall be of good quality and ground smooth for proper seating of the collector during testing. The entire assembly shall be powder coated. ^{⊗ IS 12933 (Pt-5) 2003.}</p> <p>2.2 Two numbers of MS pipe assembly, Medium Class, Nominal bore 25 mm provided with nozzles suitable sizes equally spaced along the pipes to deliver water at 4 litres per minute and 40 litres per minute for Thermal Shock test and Rain Penetration test. The pipe assembly shall be given suitable rust preventing protective coating. The pipe assembly shall be provided with suitable threaded nozzle for receiving the connector for water supply.</p> <p>2.3 Double walled fabricated water tank of capacity 500 litres. Inner wall made of stainless steel and outer wall made of MS and powder coated. Water tank shall be provided with suitable connection for water inlet and outlet. A drain valve shall also be provided for draining the water for periodical cleaning and maintenance.</p> <p>2.4 Both pipe assemblies shall be connected to a control unit for controlling the flow of water from the water tank.</p> <p>2.5 Control unit shall be fitted with 2 Numbers of Rotameter as per Specification SFPC 011. ^(Page 15)</p> <p>2.6 Individual controls shall be provided to the rotameter for controlling the flow of water at 4 litres per minute and 40 litres per minute. Non-return valve shall be provided for each rotameter in the hydraulic line.</p> <p>2.7 Hydraulic pump of rating 0.75kW, 230 V, 50Hz, Single phase shall be provided for pumping the water through the nozzles provided in the two pipe assemblies.</p> |

| | | |
|-------------------------|---------------|--|
| EQUIPMENT SPEC. CODE | : | SFPC 031 |
| NAME OF THE EQUIPMENT | : | TEST FIXTURE FOR PERFORMANCE TEST |
| PROPOSED FOR BIS LABS | : | NRoL |
| TOTAL QUANTITY REQUIRED | : | One No. |
| | | 2.8 Solenoid valve shall be provided for rain penetration test and thermal shock test. Suitable circuit breaker shall be provided for protecting the solenoid valve and pump. |
| 3.0 | Calibration : | Calibration certificate shall be furnished along with the equipment with traceability to National standards for rotameter. |
| 4.0 | Guarantee | The equipment shall be guaranteed for a minimum period of one year of satisfactory operation |
| 5.0 | Specification | IS 12933 (Part 5) |
| 7.0 | Accessories | Operating manual for rotameter shall be provided with the test fixture. |

**BUREAU OF INDIAN STANDARDS
(BANGALORE BRANCH OFFICE LABORATORY)**

EQUIPMENT SPECIFICATION

| | | |
|--------------------------------|---|--|
| EQUIPMENT SPEC. CODE | | SFPC 011, SFPC 013 and SFPC 015 |
| NAME OF THE EQUIPMENT | | ROTAMETER |
| PROPOSED FOR BIS LABS | | |
| TOTAL QUANTITY REQUIRED | | NROL |
| 1.0 | Scope Prescribes the requirements for a precision rotameter for measuring the irradiance on a plane surface which results from direct solar radiation and from the diffuse radiation from the hemisphere. This instrument is required for carrying out the following tests: <ul style="list-style-type: none"> ➤ Outdoor No-flow exposure test as per Cl. 5.2 of IS 12933 (Pt.5). ➤ External thermal shock test as per Cl. 5.4 of IS 12933 (Pt.5). ➤ Internal thermal shock test as per Cl. 5.5 of IS 12933 (Pt.5). ➤ Thermal performance test as per Cl. 6.4 of IS 12933 (Pt.5). | One No each. |
| 2.0 | Requirements Body: Acrylic Connection: Flanged with control valve Material for wetted parts: SS 304 Floats: SS 304 Maximum temperature: up to 85 °C Maximum pressure: 15 kgf/cm ² Range: 0-6 lpm, and 0-60 lpm Flow media: Water Accuracy: ± 1 % of FR | |
| 3.0 | Calibration : Calibration certificate from NABL accredited calibration agency shall be furnished along with the equipment. | |
| 7.0 | Guarantee The equipment shall be guaranteed for a minimum period of one year of satisfactory operation. | |
| 8.0 | Specification --- | |
| 9.0 | Accessories Nil | |
| | | |